



A  
**JUNIOR CO-OPERATIVE  
VARIETY TESTING PROJECT**  
**(WHEAT, OATS, BARLEY)**

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THE cover design of this report is a photographic reproduction of a plaque worked in natural colored grains, being of a design similar to the supervisors' buttons issued to all junior co-operators who had charge of tests in 1941. The lettering and lining is done in wheat, the background for the lettering is done in white millet, the elevator is worked in flax and red millet with roof and window trimmings of sweet william and lettuce seed. The centre portion is filled in with banner oats, suggesting a rough homespun effect.

The plaque was displayed at the Class "B" fairs throughout Saskatchewan during 1941 as a part of a Wheat Pool variety test exhibit.

## FOREWORD

By the President of the Saskatchewan Co-operative  
Wheat Producers Limited

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*Along the rugged pathway of modern history, man has fought and died for the principles in which he believed, but all too often have the generations which followed allowed their heritage to be on the verge of collapse before realizing its value and rising to its defence.*

*We owe much to those who laid the foundation of the co-operative movement and have now passed on. To the present and future generations is entrusted the safe keeping of their hard-won victories. To them is given the task of consolidating the gains and pressing ever forward to new goals.*

*That the boys and girls of Saskatchewan will not fail in this trust is surely exemplified in their self-sacrifice in conducting these exacting variety tests. Without thought of reward they have given of their time and expended a considerable amount of labour in order that information, not otherwise available, may be obtained for the betterment of the agricultural industry.*

*Many of the co-operators who conducted earlier tests, and even some who undertook the work during the past year, are now engaged in that great struggle which must and will result in the overthrow of the forces which challenge our freedom. To them we again give our thanks. We pray for their safe return. To their younger brothers and sisters we express our appreciation of their assistance, without which this co-operative contribution to the welfare of western agriculture would not be possible. As the years pass and our junior co-operators, as men and women, take their places in all walks of life, we know they will continue in their efforts to make this world a better place in which to live.*

J. H. WESSON.

# INTRODUCTION

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**I**N THE variety tests which have been conducted by the Saskatchewan Wheat Pool during the six-year period, 1935-1940, the primary object has been the determination of the comparative grain yields of the varieties under test, thus obtaining information in connection with the most suitable variety for use in the different cereal zones when marketed as a cash crop.

Under war conditions the number of cattle and hogs in Saskatchewan has increased considerably. Many farmers are now marketing at least a portion of their grain through livestock and accurate information covering the relative feed values of different crops is of paramount importance to their welfare.

Much data are available covering feeding trials but only meagre information has been gathered in connection with comparative crop yields when considered as feed on the farm.

To obtain information along these lines, the Saskatchewan Wheat Pool, in co-operation with the University of Saskatchewan planned its 1941 variety testing programme, the results of which are embodied in this report.

Three varieties each of wheat, oats and barley were selected for the purpose of comparison. The wheat varieties consisted of Thatcher, Apex and Regent. Valor (a new, thin-hulled, early maturing variety), Vanguard and Victory represented the oat varieties, while the barley varieties were O.A.C. 21, Newal and Rex.

The project consisted of 297 separately randomized replicated tests and in addition to comparisons between varieties, a study was made of the comparative yields of the different crops including yield grain plus straw in pounds per acre, yield grain in bushels per acre, yield grain minus hulls in pounds per acre and yield straw in pounds per acre.

Severe climatic conditions and the depredations of insects, particularly grasshoppers and sawflies, resulted in considerable losses but a surprisingly large number of the tests reached maturity and were available for inclusion in the analysis. The results, representing as they do one year only, are of course, inconclusive, but it is believed that some worth-while information covering the matters under consideration has been obtained.

## LOCATION OF TESTS

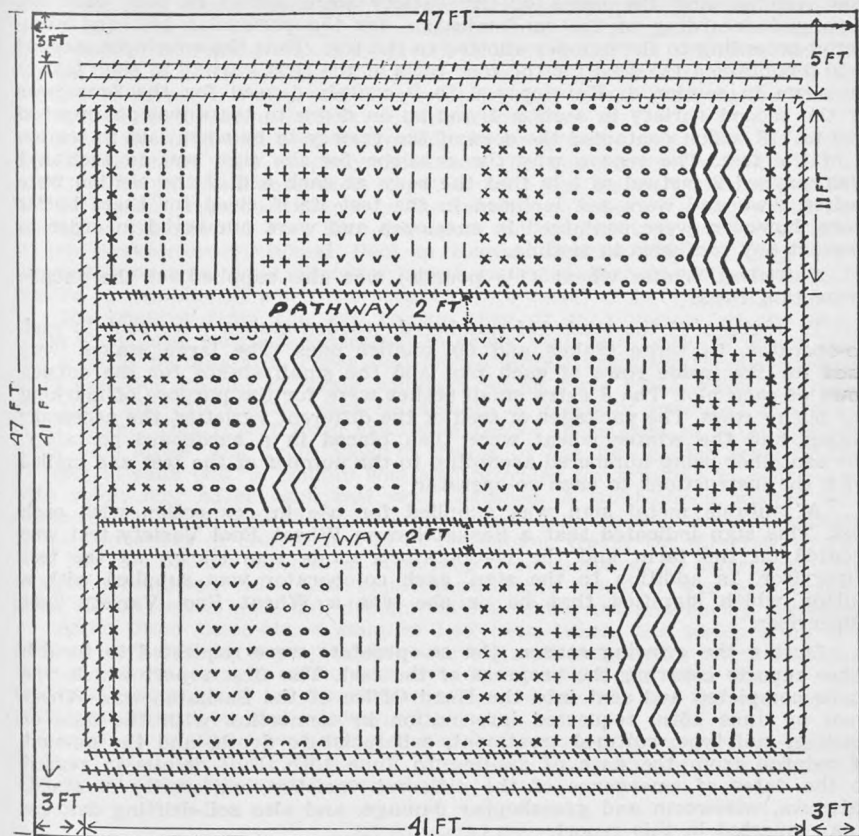
For administration purposes, the Wheat Pool has divided the grain growing area of Saskatchewan into sixteen districts. Each district is again divided into ten sub-districts. In nearly all sub-districts, two or more tests were located. The project consisted of 297 tests and completely covered the whole of the grain producing region of the province.

## DESCRIPTION OF TESTS

Each test was sown on a square of ground, the size being 41 feet by 41 feet. This allowed for 27 plots of four rows, the rows being twelve inches apart. Allowance was also made for buffer rows at the ends of each section and an outside protection of winter wheat. Sown around the test at a distance of about three feet from the outside rows of winter wheat, two or more drill widths of oats acted as wind protection and sawfly trap. The whole test was divided into three sections with a pathway two feet wide between the sections. In each of the three sections each variety of the three crops was represented by one plot of four rows, each row being ten feet long. This arrangement of the test allowing each variety to be once in each section is called the Randomized Block Plan.

In all cases the arrangement of sowing the varieties under test made possible close comparison between the different varieties, and the significance of even smaller differences was possible by separately randomizing the plots so that throughout each project the distribution of the varieties differed in each test. The seeds were sown at a depth of  $2\frac{1}{2}$  to 3 inches.

## PLAN OF THE TEST



This plan shows the method employed in sowing the test. The distribution of the varieties of each of the three crops was different in all cases, each test being separately randomized. The rows at the ends of the three sections are buffer rows, while the crossed lines between the pathways and around the test represent winter wheat.

## ORGANIZATION AND CO-OPERATION

Carefully selected Junior Co-operators were again chosen to act as test supervisors. Some of these co-operators already had some experience but many were conducting a test of this nature for the first time. To ensure that the test would be sown exactly in accordance with the prescribed plan, detailed information was supplied both in regard to laying out the test and in regard to the manner in which it was to be sown. A colored plan of each test, showing the different distribution of the crops and varieties was enclosed with the instructions. This colored plan enabled the co-operator to follow the method of randomization.

Weighing and assembling of the seed was carried out at the Head Office of the Wheat Pool Organization at Regina. Since each test was separately randomized, it was necessary to exercise particular care to ensure that the co-operator would be able to easily follow the method to be employed in sowing the different varieties. In preparing the seed 297 sets of envelopes were required, stamped from 1 to 114. The names of the varieties of the different crops were then marked on the envelope according to the randomization for each test. The envelopes were then sorted according to varieties and sufficient seed of each variety was weighed and placed in each

envelope. After this was completed, the envelopes, plainly marked with the row number and the name of the variety were sorted in sets, each set arranged according to the randomization for the particular test and numbered according to the number allotted to the test. Thus the envelopes marked 2 to 5 contained the seed for the four rows of the first variety in each test to be sown in section 1. Envelopes 6 to 9 contained seed for the four rows of the second variety in section 1 and so on down to the envelopes marked 110 to 113 which contained the seed of the variety to be sown last in section 3 of the test. The reason why the envelope for the first row in section 1 was marked 2 instead of 1 is that the rows at each end of the section were buffer rows and were not included in the test itself. Seed for these buffer rows, however, were contained in envelopes and were numbered in order to prevent any confusion in seeding.

Sufficient Winter wheat (1½ pounds) was also supplied for the outside protection rows.

In addition to the seed, 114 numbered, wooden stakes were sent to each co-operator, 54 large stakes and 60 smaller ones. The large stakes were used for the inside rows of each plot and the small stakes for the outside rows of each plot. The 6 extra small stakes were for the purpose of marking the buffer rows. The packages of seed of the different varieties, the necessary stakes and the winter wheat were then placed in a cardboard container, the container being numbered according to the number of the test and mailed with the instructions to each co-operator.

A suitable metal sign was supplied for use in connection with each test. This sign indicated that a Saskatchewan Wheat Pool Variety test was located on the farm and the co-operator's name was shown as the test supervisor. In addition to the sign, each co-operator was supplied with a button which signified that he or she was a Wheat Pool Variety Test Supervisor.

During the growing season, the co-operators were requested to furnish three reports covering the progress of the test. The first report which was to be completed and sent into the Head Office of the Saskatchewan Wheat Pool by June 15th, requested information in connection with the date of seeding, soil type, cultural treatment, soil moisture depth, and the amount of rainfall from the date of seeding to June 10th. Full details in regard to the dates of emergence of the different varieties, uniformity of stand, cutworm, wireworm and grasshopper damage, and also soil-drifting damage was requested in this report.

The second Progress Report, to be completed and returned by July 15th, asked for information regarding dates of heading, insect damage not mentioned on the first report, details in regard to weed interference and the percentage of stem, leaf or crown rust appearing on each variety.

The Final Report was required to be returned by September 1st. This report requested information in connection with the height of the plants, straw strength, neck strength of barley, date when most heads were ripe, the percentage of bird damage, the percentage of shattering, and the date of harvesting. The percentage of stem rust was also required to be noted on this report. In order that rust infection would be accurately reported, a scale was also supplied which showed six degrees of infection computed on the basis of 100 representing the maximum surface covered by rust. This scale is shown on page 7.

Space was provided on all of these reports in order that the co-operator could add remarks upon subjects not specifically asked for in the instructions.

During the growing season the tests were inspected by district representatives of the Wheat Pool Organization. Each representative was supplied with a list which showed the randomization of the tests in his district. He was also supplied with the report forms and copies of the rust scale. The reports furnished by the district representative provided a reliable verification of the reports from the Junior co-operators.

Before the tests were harvested, further instructions were prepared and

sent to the test supervisors. In order that accurate data covering comparative grain plus straw yields could be obtained the co-operator was instructed to cut each variety at a point three inches from the ground. In the instructions special attention was also given to such points as the best time to harvest and how harvesting should be done. Particular care was also requested in curing the crop and in storing it until it was ready to be handed over to the local Wheat Pool Agent for shipment.

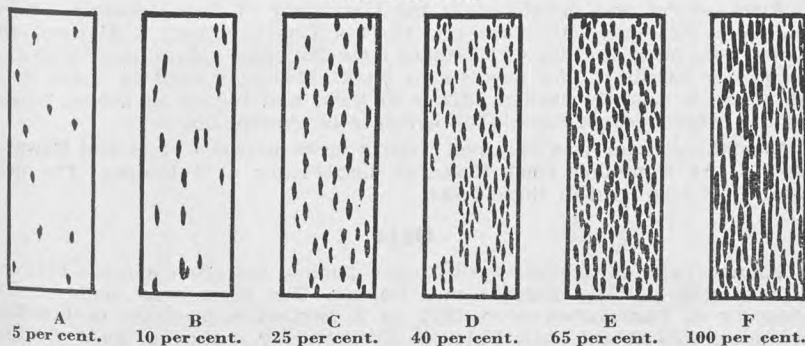
After the crop had been harvested, the co-operator was asked to ensure that the sheaves were properly dried and the two centre rows of each of the 27 plots parcelled separately together with the stakes identifying them. The 27 parcels were then placed in the required number of gunny sacks and handed to the nearest Pool Elevator agent for shipment to the Head Office of the Saskatchewan Wheat Pool in Regina. Special shipping tags were forwarded to each Pool Elevator agent in order that identification could readily be established when the sheaves were received for threshing.

The sheaves from the two centre rows of each variety of the three crops were first weighed separately in order that total yield of grain plus straw could be obtained. These two centre rows were then threshed separately and the amount of grain weighed, which gave grain yield in grams per plot. The information was entered on a specially prepared threshing report form. This report form enabled a record to be kept of total yield of grain plus straw and grain yield in grams of the two centre rows of the 27 plots in each test. A column was also provided for remarks in connection with color, etc. After each test was threshed, a three-ounce sample was taken of each variety of the three crops. These samples were then forwarded to the University of Saskatchewan at Saskatoon. Under the direction of Dr. J. B. Harrington, the samples of each crop were compared to determine their relative plumpness, color and appearance. Some research was also undertaken in connection with hull determinations of the oat and barley varieties.

After these three-ounce samples had been taken, the yields from the plots of each variety were placed in one bag and thoroughly mixed in order that a uniform sample of the variety could be obtained. This sample was then cleaned, weighed in pounds per measured bushel, and the commercial grade was placed on each variety.

After all of the wheat samples had been graded, they were forwarded to Dr. R. K. Larmour, Professor of Chemistry, University of Saskatchewan, who tested them for protein percentage.

#### RUST SCALE



Scale for estimating rust, illustrating six degrees of rustiness used in estimating the percentage of stem-rust infection. The shaded spots represent rust, and the figures represent approximately the rust percentages computed on the basis of the maximum of surfaces covered by rust as shown in the 100 per cent. figure (F). Figure F in the diagram represents 37 per cent. of actual rust-covered surface and is arbitrarily selected as 100 per cent. The other percentages are in terms of Figure F.

The project was again arranged and supervised by Dr. J. B. Harrington, Professor of Field Husbandry, University of Saskatchewan.

The compiling, summarizing, and statistical work was carried out at the Head Office of the Saskatchewan Wheat Pool in Regina, under the supervision of R. F. Haddrell.

## ANALYSIS OF DATA

In order that a study could be made of the yielding capacity, disease resistance, and general characteristics of each variety when grown under the different soil and climatic conditions of Saskatchewan, all data were compiled and analyzed by Cereal Variety Zones. The different Cereal Variety Zones are illustrated in the histograms appearing on page 19 and are described below.

Zone	Prevailing Soil Type and Climatic Conditions.
1A.....	Brown soils, prairie plains; subject to frequent droughts.
1B.....	Brown soils, prairie plains; subject to more frequent droughts than 1A.
2A.....	Dark brown soils, prairie plains; subject to occasional droughts; better moisture conditions than 1A.
2B.....	Dark brown soils, prairie plains; slightly cooler, drier and more subject to drought than 2A.
2C.....	Dark brown soils, bench land; cooler, shorter frost free season and better moisture conditions than 1A.
2D.....	Dark brown soils, prairie plains; higher elevation and distinctly shorter frost free season than 2B.
3A.....	Black soils, parkland; better moisture conditions than 2A.
3B.....	Deep black soils, parkland; shorter frost free season and better moisture conditions than 3A.
3C.....	Black soils, parkland; better moisture conditions than 2B.
3D.....	Deep black soils, parkland; distinctly shorter frost free season but better moisture conditions than 3E.
3E.....	Black soils, parkland; variable frost free seasons.
4A.....	Gray and degraded black soils, wooded region; short frost free season, better moisture conditions than 4B.
4B.....	Gray soils, wooded region; distinctly short frost free season.

## NAMES AND ORIGIN OF VARIETIES USED IN THE TEST

### Wheat

**Thatcher.**—Thatcher was produced from a cross made in 1921 at the Minnesota Agricultural Experiment Station, University of Minnesota, St. Paul, Minnesota, between Marquis x Iumillo and Marquis x Kanred. The primary aim was to obtain a wheat of high quality for milling and baking purposes that was resistant to black stem rust and of desirable agronomic type. From one of the original crosses, Marquis x Iumillo, a bread wheat type was obtained with a considerable degree of resistance to stem rust under field conditions. From the Marquis x Kanred cross, a spring wheat was selected of good milling and baking qualities that was immune to several forms of black stem rust, and of high yielding ability. Thatcher originated from a cross between these two.

**Apex.**—Apex was developed at the University of Saskatchewan, Saskatoon, from the composite cross (H. 44-24 x Double Cross) x Marquis, the Double Cross being a sister of Thatcher from the cross (Marquis x Kanred) x (Marquis x Iumillo). The new strain Sask. 1789 was used in these tests. This strain is slightly earlier, higher in yield and higher in bushel weight than the original stock Sask. 1703 which is in general use.

**Regent.**—Regent was obtained from a cross between H-44 and Reward, made at the Dominion Rust Research Laboratory at Winnipeg. The new strain, 975.6 was used in these tests.

### Oats

**Valor.**—Valor is a white seeded open panicle oat from a cross between the Australian variety Sunrise and Banner. The cross was made at the University of Saskatchewan in 1927 as a part of a program of breeding early drought-resistant oats. Valor is a very early maturing, good yielding variety with large, white seeds, thin hulls, susceptibility to stem rust, and resistance to smut. The aim was to produce a variety which would give assurance of a feed supply under conditions unfavorable to Banner, Victory, Vanguard and Gopher.

**Vanguard.**—From the cross of Hajira (a rust-resistant variety) with Banner made by the Dominion Rust Research Laboratory at Winnipeg. Vanguard is a white seeded open panicle variety highly resistant to stem rust but not resistant to smut. Under rust epidemic conditions in Eastern Saskatchewan Vanguard outyields all of the rust susceptible varieties.

**Victory.**—Introduced from Sweden many years ago. Victory has open panicles and white kernels, and is moderately susceptible to smut and to stem rust.

## Barley

**O.A.C. 21.**—Produced by selection from Manchuria by Dr. C. A. Zavitz at the Ontario Agricultural College, is the standard malting barley of Canada. It is a nodding, six-rowed, rough-awned variety with greenish-blue seeds. It is moderately susceptible to rusts, susceptible to loose smut and fairly resistant to covered smut.

**Newal** is a white-seeded, smooth-awned variety developed at the University of Alberta from a cross made in 1919 between O.A.C. 21 and a Minnesota hybrid from Manchuria x Lion. It is susceptible to stem rust and moderately susceptible to loose and covered smut.

**Rex** was originated by Dr. J. B. Harrington at the University of Saskatchewan by crossing Velvet, a sister of Regal, with Hannchen. It is a nodding, two-rowed, smooth-awned variety with deep straw-colored kernels. It is susceptible to stem rust and moderately susceptible to loose and covered smut.



Sowing the Test of Belton Thistlethwaite, Glenbush

## GENERAL GROWING CONDITIONS

At the beginning of the season the most unsatisfactory moisture conditions were in the extreme south-west, where in some areas, moisture was required to ensure proper germination. Throughout most of the province, however, conditions were better than they had been for a number of years and the need was for warm, dry weather to enable seeding operations to progress more rapidly, seeding being generally later than in a normal year.

Unsettled weather prevailed throughout practically the whole of May but at the end of the month wheat seeding was almost completed. High winds had caused some soil drifting. Frosts had occurred in the centre and north and cutworms and wireworms were present at scattered points, but despite these unfavorable features and the fact that in some areas reserve moisture was limited, generally the crop was in relatively good condition. At the end of the month rainfall was the most pressing requirement.

Accompanied by low temperatures generous rains fell over most of Saskatchewan's grain growing areas during the first week in June. Over most of the province moisture conditions were now satisfactory and the precipitation had assisted in repairing damage done by both soil-drifting and frosts. In the east-centre and parts of the centre, however, only light rains had fallen. On June 6th a heavy frost was reported in a number of areas and at some points in the south-east and east the thermometer registered as low as 22°. Immediately after this frost temperatures became higher and the warmer weather was of great assistance in promoting more rapid growth of the crop which was somewhat backward. Showers also helped to repair some of the damage caused by frost. The rainfall was, however, by no means general. Further precipitation was required particularly in the centre, where some deterioration had already occurred because of lack of moisture. In other areas, while little appeared to be actually suffering, moisture reserves were limited and an early rain was urgently needed. The most unsatisfactory conditions still existed in the south-west in an area reaching out from Swift Current.

Showers and warmer weather continued to improve Saskatchewan's crop until the middle of June, but during the week of June 20th deterioration began to be noticeable. Little rain had fallen during this week and in part of the south-west in an area which began at Swift Current and reached to Moose Jaw all crops were suffering severely and at some points the opinion was freely expressed that unless moisture was received immediately total failure must result. Other areas where sharp declines had occurred were in the centre, and east-centre.

During the last week of June searing winds with practically no precipitation caused a serious decline in the wheat crop. Temperatures of over 100° F. were reported on four consecutive days; Consul, Kindersley, and Macklin with readings of 104 degrees showed the highest official temperatures. The most serious decline occurred in the south-west, centre and east-centre, although some deterioration was shown in all districts except a part of the south-east. In general, the Saskatchewan wheat crop at the end of June was in a very unsatisfactory condition. Coming at a time when most of the wheat was either in the shot blade or heading out, the hot winds wrought considerable havoc. In some regions the damage was irreparable and over a large area the conditions which had prevailed the previous week had changed completely, prospects of a fair to good crop having declined to a situation which at best was highly problematical. Hail storms were reported in the south-centre, east-centre and north-west. Some grasshopper damage was reported in the south-west but injury from either of these causes was of minor importance. Extreme heat and hot winds were the primary reasons for the sharp loss in condition.

In the first week of July some relief was experienced from rains which fell in varying amounts and covered the greater part of the province. The heaviest rainfall occurred in the south-west where at a few points the total precipitation exceeded 4 inches; but in the severely drouth-stricken area surrounding Swift Current, the moisture came too late to be of material assistance insofar as the production of a commercial crop was concerned, and

while prospects of a return of seed and feed had been enhanced, the presence of numerous grasshoppers made the final outcome very uncertain. In the central parts of the province and in parts of the east-centre the rains appeared to be halting the decline. The crops in these areas, however, had been badly burned and in most areas it was feared that only light yields could be expected. In the west-centre conditions varied greatly. A considerable amount of burning was reported, and though rains had been of help, much permanent damage had been done. Over most of the territory comprising the north-centre and north-west, precipitation was only of a light nature and in the north-west there was a relatively large region which received no moisture. Severe deterioration had occurred in these areas and it was feared that unless a good soaking rain was received immediately further deterioration of a rapid and severe nature must be expected. In the north-east a few points reported fairly good rains but generally there was insufficient moisture in this region and the hot winds reduced the condition of the early fields considerably. The most promising prospects still existed in the south-east and part of the south-centre. Grasshopper damage was increasing, particularly in the south, but taking the province as a whole the depredations of these insects were not severe. Hail storms and a light frost were reported. In a part of the province, particularly in an area south of Regina, where crop conditions were very satisfactory, an examination of the wheat plants revealed the presence of sawfly larvae in what appeared to be a considerable number. Much alarm was expressed at the large number of infested stems.

In the second week of July temperatures were decidedly lower and scattered showers helped to maintain the condition of the crop. Further deterioration had occurred throughout the greater part of the province and there was immediate need of a good soaking rain. Another damaging factor during the week was heavy wind and hail storms which had occurred in parts of the south-centre and south-west. In the south-centre, winds of cyclonic intensity together with hail caused considerable devastation. Grasshopper activity and heavy sawfly infestation was reported at many points of the south-east, centre and south-centre.

In the middle of July excessive heat with recordings of 100° together with the absence of rainfall took a further heavy toll. Because of the heat and almost complete lack of rain, the areas where severe damage had occurred had extended considerably. Beginning in the south-west part of the province, with the exception of parts of the extreme south-west which had timely rains, the stricken region now reached into the centre and extended over a considerable part of the north-west. Throughout this wide territory which more or less took the form of a crescent, little more than the return of seed and feed was expected and at many points it was feared that unless early rains were received, and lower temperatures prevailed, a total failure must result. Outside the area described there was a large territory where deterioration had been extremely severe. This area encroached into the east-centre and into parts of the north-east and north-centre. The decline in prospects which had intensified the serious situation in the regions mentioned had also extended over the rest of Saskatchewan. In the south-east, where the outlook had been and still remained most promising, the hot winds had cut down prospects in a number of areas. Coming at a time when much of the wheat was in the filling stage, the opinion was freely expressed that the extreme heat would seriously affect the final outcome. Grasshoppers were quite active and scattered hail storms had occurred during this period. Apart from drought conditions, however, at this time the most serious threat to the 1941 wheat production was the heavy sawfly infestation. In a number of areas the infestation was extremely heavy and covered the entire field. This fact applied particularly to the early sown wheat. At other points the edges of the fields were heavily infested with lighter infestation in the centre.

High temperatures and searing winds again prevailed during the last week of July. Official readings of 100 degrees and over were noted at a number of points; Macklin, Kindersley, and Elbow with readings of 102

reported the highest temperatures. During the middle of the week the weather moderated. Further declines in the condition of the crop were shown in nearly all districts. The severely drought-stricken area had again widened, encroaching into further areas, particularly in the north-west. At many points in this extensive region practically no commercial crop was in prospect and it was feared that unless moisture was received immediately the feed situation would be extremely serious. At many stations the wheat fields were already being cut for feed. In all other areas, with the exception of the south-east, the north-east, a small area in the extreme south-west, a limited region in the west-centre and a narrow strip across parts of the extreme north, all crops had suffered severely and only poor to fair yields could be looked for. Even in the better crop regions which are mentioned above the high temperatures came at a time when much of the wheat was in the filling stage, and it was feared that both yields and grades would be affected. Throughout practically the entire province oats and barley were badly in need of moisture and these crops appeared to have suffered even more than the wheat. Generally, the flax had withstood the severe weather conditions fairly well but unless good rains were received immediately it was expected that sharp deterioration would occur. Cutting of oats and early barley was reported at a number of points and in the south-east and south-centre some fields of early wheat were also being harvested. Sawfly infestation was causing considerable alarm over a wide area and it was feared that even with the exercise of every precaution, returns would be seriously reduced.

During the first week of August, rains varying from light showers to heavy downpours fell over a considerable part of Saskatchewan's crop producing area. The rains, however, were extremely uneven. They were most abundant in the south-east, parts of the south-centre, centre, and east-centre. Elsewhere while heavy showers fell at some points, generally the precipitation was considerably lighter and in the west-centre and parts of the south-west, north-centre and north-west, only light scattered showers were reported. In the better crop areas the rainfall was undoubtedly of benefit, particularly to the late sown fields, but in the severely stricken areas it came too late to be of material benefit insofar as the production of a commercial crop was concerned. Where rain was received, however, the feed situation was improved. In other areas rainfall consisted of only light scattered showers. This applied particularly to parts of the north-centre and north-west where moisture was urgently needed. The rainfall resulted in a general improvement in moisture conditions, and at a number of points, particularly in the south-east, there was sufficient moisture to bring the crop to maturity, but the heavy sawfly infestation which was now apparent throughout the entire south and centre, and also parts of the north, was causing considerable concern. The early fields were heavily infested. At a number of points severe damage was already reported and it was feared that heavy losses between this time and harvest were inevitable. Grasshoppers were also causing some injury to the wheat. These pests were extremely numerous at many points in the south and at a number of stations in the centre their numbers increased considerably during the week. Considerable damage was reported particularly to the oats and barley and in a number of areas the oat crop was being cut green to save it from complete destruction. In the west-centre, grasshoppers were also menacing the flax crop. Scattered hail storms were reported but while at a few stations some heavy local damage was indicated, generally the injury was not severe. Cutting of the early wheat had begun in many regions.

Unsettled weather continued throughout the greater part of August, but at August 22nd, 73% of the wheat and 63% of the coarse grains had been cut. Only 18% of the wheat, however, had been threshed. The hot winds which prevailed during the growing season resulted in a considerable number of shrunken kernels. Because of sawfly infestation much of the wheat crop had been cut while still immature and many green kernels were in evidence. These factors, together with excessive bleaching, and in some areas weed stain, resulted in considerable grade losses. All varieties showed

an abundance of bleached kernels while still standing. Grasshoppers were continuing their activities particularly in the south-west and centre and many fields which still remained standing were being attacked. The late flax crop was being severely damaged and in a number of areas it was feared that these late fields would suffer severely before they could be harvested. In the south-east rust infection was also apparent in the flax, and many late sown fields of oats and barley were also heavily rust infected. Very unfavorable weather, the worst in years, continued during harvest, causing extensive bleaching and also sprouting especially in the thousands of acres of wheat swathed early to avoid excessive loss from the dropping of sawfly infested stems.

In conclusion it might be said that Saskatchewan's 1941 crop was an extremely disappointing one. In the spring moisture conditions were relatively satisfactory and while, because of cool damp weather, growth was somewhat slow, the plants appeared to be developing a good root system. The condition of the wheat crop steadily improved until the third week in June; at this time lack of adequate moisture supplies became apparent and the searing winds which followed resulted in considerable damage, much of which was entirely irreparable. Soil-drifting, cutworm, wireworms, frost, and hail, all contributed to the decline but while in some areas severe local losses were reported, taking the province as a whole injury from these causes was not severe. Extensive damage by grasshoppers occurred at some points, particularly in the poor crop regions, but generally these pests were more active in the coarse grains than in the wheat crop. Moisture deficiency, searing winds, and a heavy sawfly infestation over a large part of the province were the major causes of the reduction in crop prospects. The combination of these three destroying agencies was primarily responsible for a decline representing nearly ten bushels per acre, which occurred between June 13th and August 28th, and resulted in a wheat crop which was only slightly more than half of the 1940 production.



The Test of Clifford Douglas Phillips, Cabana

## LIST OF CO-OPERATORS

Names and addresses of the Junior Co-operators who conducted tests in 1941 are shown below.

This list is arranged in Wheat Pool Districts but the Cereal Variety Zones in which the test was located is also shown.

District	Sub-District	Test Designation	Name and Address of Co-operator	Cereal Variety Zone
<b>WHEAT POOL DISTRICT 1</b>				
1	1	A	Hugh Ronald Wilmot.....	Carnduff..... 2A
1	1	B	Darwin Grand McFarlane.....	Gainsborough..... 3A
1	2	A	Alexander Joseph Gervais.....	Alida..... 2A
1	2	B	Kenneth Allan Schaefer.....	Fertile..... 3A
1	3	A	James Herbert Gilroy.....	Oxbow..... 2A
1	3	B	John Andrew Humble.....	Auburton..... 3A
1	4	A	Kenneth Chamney.....	Kingsford..... 2A
1	4	B	Stuart Bowles Martin.....	Frobisher..... 2A
1	5	A	Gavin Dale Mohns.....	Viewfield..... 2A
1	5	B	Donald Joseph Bolduc.....	Estevan..... 2A
1	6	A	James Donald Arts.....	Midale..... 2A
1	6	B	John Dornian.....	Outram..... 1A
1	7	A	Gordon Henry Stronge.....	Colgate..... 2A
1	8	A	Neil Victor Fenwick.....	Griffin..... 2A
1	8	B	John Joe Kot.....	McTaggart..... 2A
1	9	A	Harold Gordon Wyatt.....	Kisbey..... 2A
1	9	B	Robert Gordon Askin.....	Arcola..... 3A
1	10	A	Lloyd Edward Mills.....	Wordsworth..... 3A
1	10	B	Clarence V. Borreson.....	Antler..... 3A
<b>WHEAT POOL DISTRICT 2</b>				
2	1	A	Floyd Orville Barrett.....	Radville..... 1A
2	1	B	Vernon Earl Janke.....	Beaubier..... 1A
2	2	A	John Ehrmantraut.....	Minton..... 1A
2	2	B	Theo. Fladeland, Jr.....	Gladmar..... 1A
2	3	A	James Paterson, Jr.....	Hart..... 1A
2	3	B	W. Alex. Thompson.....	Coronach..... 1A
2	4	A	Robert James Edwin Ruthven.....	Lisieux..... 1A
2	4	B	Georges Boisvert.....	Willowbunch..... 1A
2	5	A	Richard David Ellis.....	Lonesome Butte..... 1A
2	5	B	William Kenneth Stewart.....	Strathallen..... 1A
2	6	A	Henry William Flynn.....	Fir Mountain..... 1A
2	6	B	Achille Jules Palmier.....	La Fleche..... 1A
2	7	A	George Peter Yorga.....	Flintoft..... 1A
2	7	B	Neil Allen Pomrenke.....	Congress..... 1A
2	9	A	Ian Campbell Little.....	Bengough..... 1A
2	9	B	Richard Jackson Hartley.....	Ogema..... 1A
2	10	A	John Mazur.....	Amulet..... 1A
2	10	B	Leonard L. McElderry.....	Trossachs..... 1A
<b>WHEAT POOL DISTRICT 3</b>				
3	1	A	Lloyd John Gavelin.....	McCord..... 1A
3	1	B	Ronald Merrett.....	Mankota..... 1A
3	2	A	Ralph Walter Hook.....	Reliance..... 1A
3	2	B	John Harbara.....	Masefield..... 1A
3	3	A	Edward Hiram Hammond.....	Climax..... 1A
3	3	B	James Allen Ludwig.....	Bracken..... 1A
3	4	A	Otto Leo Romanekewicz.....	Frontier..... 1A
3	4	B	Neil Roderick Buchanan.....	Claydon..... 1A
3	5	B	Paul Edward Wenaas.....	Robsart..... 1A
3	6	A	Leonard Arthur Stork.....	Klintonel..... 2C
3	6	B	Vida Violet Svennes.....	Olga..... 1A
3	7	A	Frank Earnest Rebbeck.....	Southfork..... 1A
3	7	B	Orval Morris Chattersson.....	Eastbrook..... 1A
3	8	A	Corbett Alvin Kessy.....	Instow..... 2C
3	8	B	Edward Wright.....	Shaunavon..... 1A
3	9	A	Peter Arnt Peterson.....	Admiral..... 1A
3	9	B	Eldon George Anderson.....	Driscoll Lake..... 1A
3	10	A	Eldon Francis Knox.....	Wallard..... 1A
3	10	B	John Chedzey Mayo.....	Hazenmore..... 1A
<b>WHEAT POOL DISTRICT 4</b>				
4	1	A	Eric William Eccleston.....	Edgell..... 2C
4	1	B	Phyllis Mabel Butler.....	Carmichael..... 1B
4	2	A	Gerald A. Tustian.....	Maple Creek..... 1B
4	2	B	Frank White.....	Maple Creek..... 1B
4	3	A	Donald Dale Hussey.....	Stewart Valley..... 1A
4	3	B	John David Dyck.....	Wymark..... 1A
4	4	A	Philip Almon Jensen.....	Gull Lake..... 1B
4	4	B	Dewayne Arnold Brown.....	Antelope..... 1A
4	5	A	Milburn James Trembath.....	Cabri..... 1A
4	5	B	Walter George Bowditch.....	Success..... 1A
4	6	A	Lorne Robert Russell.....	Maple Creek..... 1B
4	6	B	Charles Duncan Ahlberg.....	Golden Prairie..... 1B
4	7	A	Archie Allen MacPhail.....	Linacre..... 1B
4	7	B	John George Obritsch.....	Fox Valley..... 1B

District	Sub-District	Test Designation	Name and Address of Co-operator	Cereal Variety Zone
<b>Wheat Pool District 4—Continued</b>				
4	7	C	John Andreas.....	Kuest..... 1B
4	8	A	Alvin Frederick.....	Burstall..... 1B
4	9	A	Henry Slater Rowbotham.....	Lemsford..... 1B
4	10	A	Wm. J. Zeller.....	Hazlet..... 1B
4	10	B	Melvin Robert Crampton.....	Abbey..... 1B
<b>WHEAT POOL DISTRICT 5</b>				
5	1	A	William Frederick Campbell.....	Vantage..... 1A
5	2	A	William Laurence Oehlerking.....	Gravelbourg..... 1A
5	3	A	Alan Bruce Dawson.....	Neville..... 2C
5	3	B	Neil Robertson Marjerison.....	Neville..... 2C
5	5	A	McGowan Smart.....	Wiwa Hill..... 1A
5	5	B	John P. Schoenroth.....	Hodgeville..... 1A
5	6	A	David Gilbert Morgan.....	Old Wives..... 1A
5	6	B	Charles Burton Wilson.....	Coderre..... 1A
5	7	A	Thomas Douglas Humphrey.....	Parkbeg..... 1A
5	7	B	Ralph Joseph Tanner.....	Boharm..... 1A
5	8	A	George Rudeen.....	Parkbeg..... 1A
5	8	B	Charles Wheeler Mathieson.....	Tuxford..... 2A
5	9	A	Bruce Thomas Hatley.....	Lawson..... 1A
5	9	B	Douglas Gilmour Hughes.....	Chaplin..... 1A
5	10	A	Walter Alexander Zimmerman.....	Morse..... 1A
5	10	B	Herbert Arthur Young.....	Log Valley..... 1A
<b>WHEAT POOL DISTRICT 6</b>				
6	1	A	John Edgar Joseph O'Byrne.....	Lewvan..... 2A
6	1	B	Donald Wallace Steer.....	Yellow Grass..... 2A
6	2	A	John Marshall Stewart.....	Bechard..... 2A
6	2	B	Peter Klotz.....	Davin..... 2A
6	3	A	Carl A. Weisshaar, Jr.....	Wilcox..... 2A
6	3	B	Donald Raymond Renwick.....	Corinne..... 2A
6	4	A	George Peter Machmer.....	Spring Valley..... 1A
6	4	B	Ross McNutt.....	Cardross..... 1A
6	5	A	Jack Vernon Lind.....	Baildon..... 1A
6	5	B	William Barclay Green.....	Boharm..... 2A
6	6	A	James Richard Palmer.....	Belle Plaine..... 2A
6	6	B	Claude Ambrose Dobson.....	Rouleau..... 2A
6	7	A	James Anderson Farley.....	Grand Coulee..... 2A
6	7	B	James Wellington Keirl.....	Frankslake..... 2A
6	8	A	Orval Albert Brown.....	Sintaluta..... 3A
6	8	B	Albert Krause.....	Qu'Appelle..... 2A
6	9	A	James Edward Armstrong.....	Muscow..... 3A
6	9	B	Wilfred Austin Dieter.....	Lorlie..... 3A
6	10	A	Alvin James Binnie.....	Tregarva..... 2A
6	10	B	Arthur Carl Kohler.....	Disley..... 2B
<b>WHEAT POOL DISTRICT 7</b>				
7	3	A	Fred Alexander Easton.....	High View..... 3A
7	3	B	Stuart William Kidd.....	Vandura..... 3A
7	4	A	Steve Simon.....	Kipling..... 2A
7	4	B	Frank William Pachal.....	Kipling..... 2A
7	5	A	Allan Bruce McKay.....	Corning..... 2A
7	5	B	Ernest Albert Elder.....	Fillmore..... 2A
7	6	A	Albert F. Rieder.....	Peebles..... 2A
7	6	B	Emilien Louis Joseph Labreche.....	Montmartre..... 3A
7	7	A	William John Lemcke.....	Wolseley..... 3A
7	7	B	Kakiuestahair Community Farm.....	Broadview..... 3A
7	8	A	Charles Williamson.....	Bear Creek..... 3A
7	8	B	Vincent James Hawkes.....	Percival..... 3A
7	9	A	Ernest T. Radbourne.....	Gerald..... 3A
7	9	B	Ralph R. W. Jacobson.....	Stockholm..... 3A
7	9	C	Ivor Johnson Foshager.....	Atwater..... 3A
7	10	A	Albert John Allen.....	Lemberg..... 3A
7	10	B	Martha Hanowski.....	Killaley..... 3A
<b>WHEAT POOL DISTRICT 8</b>				
8	1	A	Ardo Elmer Kendel.....	MacNutt..... 3B
8	1	B	Walter Ninowski.....	Calder..... 3B
8	2	A	Calvert David Gibson.....	Rokeby..... 3C
8	2	B	Mickey Vargo.....	Rokeby..... 3C
8	2	C	Lorne Percy Lockhart.....	Rokeby..... 3C
8	3	A	Joe Halyk.....	Birmingham..... 3C
8	3	B	Douglas David Wotherspoon.....	Melville..... 3C
8	3	C	Gordon Hollinger.....	Duff..... 3A
8	4	A	Alexander Bodie.....	Willowbrook..... 3C
8	4	B	Leslie John Muir.....	Yorkton..... 3C
8	5	A	Iain Cowan Maclean.....	Kamsack..... 3C
8	5	B	Peter M. Tomlin.....	Veregin..... 3C
8	6	A	Freddie Walker.....	Tadmore..... 3C
8	6	B	Paul Gushulak.....	Burgis..... 3C
8	7	A	Norman Ross Turner.....	Invermay..... 3C
8	7	B	Harry Petryshyn.....	Rama..... 3C

District	Sub-District	Test Designation	Name and Address of Co-operator		Cereal Variety Zone
Wheat Pool District 8—Continued					
8	7	C	John Sawchuk.....	Sheho.....	3C
8	8	A	Lorne Boyd Pollock.....	Hassan.....	3B
8	8	C	Fred A. Czornobay, Jr.....	Endeavour.....	4A
8	9	A	Pete Kostenuik.....	Ormside.....	4A
8	10	A	Ross Gordon Johnson.....	Pelly.....	3B
8	10	B	Philip Pasieka.....	Arran.....	3B
WHEAT POOL DISTRICT 9					
9	1	A	William Parfenuik.....	Hubbard.....	3C
9	3	A	Ethel Elizabeth Mitrusky.....	Lestock.....	3C
9	3	B	John Orban.....	Punnichy.....	3C
9	4	A	Harold Wilfred Morton.....	Gibbs.....	2B
9	4	B	Richard John MacLennan.....	Earl Grey.....	2B
9	5	A	William James Lock.....	Cymric.....	2B
9	6	A	William Robert Pope.....	Drake.....	2B
9	7	A	Harry F. Wodtke.....	Punnichy.....	3C
9	7	B	W. Joe Buitenhuis.....	Raymore.....	2B
9	8	A	Violet Eugenia Nystrom.....	Product.....	3C
9	9	A	Robert Keith Dryden.....	Tuffnell.....	3C
9	10	B	Louis Hugh Halldorson.....	Leslie.....	3C
WHEAT POOL DISTRICT 10					
10	1	A	Vernon Arthur Wildfong.....	Craik.....	2B
10	1	B	Daniel Mill Zerr.....	Holdfast.....	2B
10	2	A	Gordon A. McEwen.....	Riverhurst.....	1A
10	3	A	Arthur Henry Urwin.....	Beechy.....	1A
10	3	B	Albert Henry Meaden.....	Beechy.....	1A
10	4	A	Kenneth Kingzett Hodges.....	Wiseton.....	1A
10	4	B	Edwin T. D. Atkinson.....	Dinsmore.....	1A
10	5	A	Orval Douglas Fisher.....	Birsay.....	1A
10	5	B	Kenneth Roy Gibson.....	Bratton.....	2B
10	6	A	George Malcolm Dodds.....	Loreburn.....	2B
10	6	B	Stanley Arnold Hauberg.....	Glenside.....	2B
10	7	A	David Graham Clark Donaldson.....	Davidson.....	2B
10	8	A	Harris Raymond Reid.....	Renown.....	2B
10	8	B	Leonard Joseph Shirley Koza.....	Imperial.....	2B
10	9	A	Arnold William Johnston.....	Hanley.....	2B
10	9	B	Mervin Holder.....	Bladworth.....	2B
10	10	A	Thomas Andrew Murison.....	Tessier.....	2B
10	10	B	Lorne Howard Ryan.....	Donavon.....	2B
WHEAT POOL DISTRICT 11					
11	1	A	Anna Matilda Gaensly.....	Matador.....	1A
11	1	B	Joseph Dennis Glum.....	Tyner.....	1A
11	3	A	Mary Elizabeth Wellbelove.....	Eston.....	1A
11	4	B	Charles Robert Douglas.....	Eyre.....	1B
11	5	A	Reginald Yeomans.....	Marengo.....	1B
11	5	B	Stan. Campbell Finley.....	Dewar Lake.....	1B
11	6	A	Charles Morris Hickson.....	Kindersley.....	1A
11	7	A	Margaret Javens.....	Rosetown.....	2B
11	8	A	Donald James Evans.....	Fiske.....	1A
11	8	B	Henry Francis Scoffin.....	Herschel.....	1A
11	9	B	Phyllis Edith Pinchbeck.....	Millerdale.....	1A
11	10	A	Melvin Peter Yalte.....	Court.....	1B
WHEAT POOL DISTRICT 12					
12	1	A	Floyd Carberry.....	Landis.....	2D
12	2	A	Emil L. Lehnert.....	Palo.....	2D
12	2	B	James Howard Bailey.....	Baljenie.....	3E
12	3	A	Lawrence Vincent Merkowsky.....	Cavell.....	2D
12	3	B	Clifford Stanley Carter.....	Kelfield.....	2D
12	4	A	Alex. Gottfried.....	Luseland.....	2D
12	4	B	Wilfred Joseph Foster.....	Kerrobart.....	1A
12	5	A	Donald George Scott.....	Scott.....	2D
12	5	B	Morris Zunti.....	Luseland.....	2D
12	6	A	Harold Wayne Harlow.....	Cactus Lake.....	2D
12	6	B	James Alexander Conly.....	Macklin.....	2D
12	7	A	Robert James Jack.....	Adanac.....	2D
12	7	B	Isabell Wallace.....	Rutland.....	2D
12	7	C	William Andrew Quick.....	Senlac.....	2D
12	8	A	Henry Eugene Harper.....	Waseca.....	3E
12	9	A	Charles Edward Foisy.....	Cutknife.....	3E
12	9	B	Gordon Haase.....	Wilkie.....	2D
12	10	A	Henry Bourke Laycock.....	Battleford.....	3E
12	10	B	Robert Bruce Nelson.....	Prongua.....	3E
WHEAT POOL DISTRICT 13					
13	1	A	William Baron Timmerman.....	Viscount.....	2B
13	1	B	Marvin Schroeder.....	Guernsey.....	2B
13	1	C	John William Lees.....	Carmel.....	2B
13	2	A	Jacob Moldenhauer.....	Colonsay.....	2B
13	2	B	Almer Woiden.....	Young.....	2B
13	4	A	John Aimer Graham, R.R.3.....	Saskatoon.....	2B

District	Sub-District	Test Designation	Name and Address of Co-operator	Cereal Variety Zone
<b>Wheat Pool District 13—Continued</b>				
13	4	B	Arnold Victor Deibert.....	Elstow..... 2B
13	4	C	James Ronald Sutherland.....	R.R. 3, Saskatoon..... 2B
13	5	A	Clare James Paur.....	Langham..... 2B
13	6	A	Herbert John Porter.....	Feudal..... 2B
13	6	B	Ernest Samuel Jasper.....	Struan..... 2B
13	7	A	Jacob D. Hein.....	Osler..... 2B
13	7	B	Ernest Skelton.....	Aberdeen..... 2B
13	8	A	J. E. Blain.....	Prud'homme..... 2B
13	8	B	Johnny Felix Warick.....	Dana..... 2B
13	9	A	Dmytro D. Hnidy.....	Wakaw..... 3E
13	9	B	Wilfred Diederich.....	Cudworth..... 3E
13	9	C	William J. Kindrachuk.....	Alvena..... 3E
13	10	A	Alfred Altrogge.....	St. Benedict..... 4A
<b>WHEAT POOL DISTRICT 14</b>				
14	1	A	Stanley Gibb.....	Lintlaw..... 4A
14	1	B	Raymond Arthur Hendren.....	Kelvington..... 3C
14	2	A	Bert Otto Anderson.....	Hendon..... 3C
14	2	B	Roy Adolph Tjernstrom.....	Margo..... 3C
14	3	A	Sydney Herbert.....	Quill Lake..... 3C
14	3	B	Leo M. McGrath.....	Lanigan..... 3C
14	4	A	Benno William Bergermann.....	Muenster..... 3C
14	4	B	Leo Hleck.....	Englefeld..... 3C
14	4	C	Bernard Berscheid.....	Lake Lenore..... 3C
14	5	A	Lloyd Douglas Loyns.....	Lac Vert..... 3C
14	5	B	Georg Gullickson.....	Naicam..... 3C
14	6	A	John Weber.....	McKague..... 4A
14	6	B	Ivar Olaf Whitford.....	Rose Valley..... 3C
14	7	A	Jim Tatlow.....	Resource..... 3D
14	7	B	Thomas Ronald Jellicoe.....	Beatty..... 3D
14	8	A	John William McEwan.....	R.R. 1, Tisdale..... 3D
14	8	B	Edward John Hainstock.....	Sylvania..... 3D
14	9	A	Alfred C. York.....	Leacross..... 3D
14	9	B	Walter Douglas Beattie.....	New Osgoode..... 3D
<b>WHEAT POOL DISTRICT 15</b>				
15	1	B	Boryslaw Stelmaschuk.....	Tway..... 4A
15	2	A	Harry Zelowski.....	Davis..... 3E
15	2	B	David Wallace Boyes.....	Domremy..... 3E
15	3	A	Walter Lee Kreuger.....	Duck Lake..... 3E
15	3	B	William Frederick Anderson.....	Duck Lake..... 3E
15	3	C	Emile Blanchard, Jr.....	Duck Lake..... 3E
15	4	A	Eldon H. Krause.....	Rosthern..... 3E
15	4	B	Beatrice Marie Friesen.....	Rosthern..... 3E
15	4	C	Leonel Ponthoux.....	Carlton..... 3E
15	6	A	Harvey William LaRose.....	Wood Hill..... 4B
15	6	B	Henry Arnold Egeland.....	Bodmin..... 4B
15	7	A	Irvin William Jung.....	Mont Nebo..... 3E
15	7	B	Esther Marjorie Kell.....	Canwood..... 4B
15	8	A	Albert Edward Pugh.....	Wild Rose..... 3E
15	8	B	William Douglas Henry.....	Holbein..... 3E
15	8	C	Richard William Roberts.....	Briarlea..... 3E
15	9	A	Teddy McKeand.....	White Star..... 3E
15	9	C	Arthur Edwin Clapson.....	Ridgedale..... 3D
15	10	B	Sven Larson.....	Kinistino..... 3D
<b>WHEAT POOL DISTRICT 16</b>				
16	1	A	Vernon Lloyd Steele.....	Ruddell..... 3E
16	1	B	Basil Boulton Crawford Baker.....	Fielding..... 3E
16	2	A	John Percy Simmonds.....	Speers..... 3E
16	2	B	Edward Philip Hudek.....	Hafford..... 3E
16	3	A	Gustave Hullebush.....	R.R. 3, N. Battleford..... 3E
16	3	B	Nicholas Stishenko.....	Iffley..... 3E
16	4	A	Clayton Arthur Edgelow.....	Cavalier..... 3E
16	4	B	Georges Jullion.....	St. Hippolyte..... 3E
16	5	A	Ken. W. Wesson.....	Maidstone..... 3E
16	5	B	Peter Roy Taylor.....	Paynton..... 3E
16	6	A	Gordon Vernon Roy Ruttan.....	Lone Rock..... 3E
16	6	B	Kenneth Peter Sutton.....	Marshall..... 3E
16	7	A	Doris Kathleen Bullen.....	Frenchman Butte..... 3E
16	7	B	Philip Rothery.....	Deer Creek..... 3E
16	8	A	Robert Albert Toevs.....	Livelong..... 3E
16	8	B	John Robert Johnson.....	Livelong..... 3E
16	9	A	Leo Olaf and Emil Louie Larson.....	Robinhood..... 4B
16	9	B	Belton Henry Thistlethwaite.....	Glenbush..... 4B
16	9	C	Donald Edward Truemmer.....	Midnight Lake..... 4B
16	9	D	William Harvey Turcotte.....	Dorintosh..... 4B
16	9	E	Clifford Douglas Phillips.....	Cabana..... 4B
16	10	A	Robert Owen Jordan.....	Bapaume..... 4B
16	10	B	William Howard Johnson.....	Mayfair..... 3E
16	10	C	Leon Henri.....	Laventure..... 4B
16	10	D	Abraham Unrau.....	Mullingar..... 3E

## RAINFALL

As the amount of rainfall during the growing season has a far greater influence upon wheat yields than the amount of the annual precipitation, the rainfall shown in Table No. 1 covers only the months representing the growing period of the wheat in Saskatchewan, during 1941 (April to August). The data are summarized by Cereal Variety Zones.

### MAP SHOWING LOCATION OF TESTS

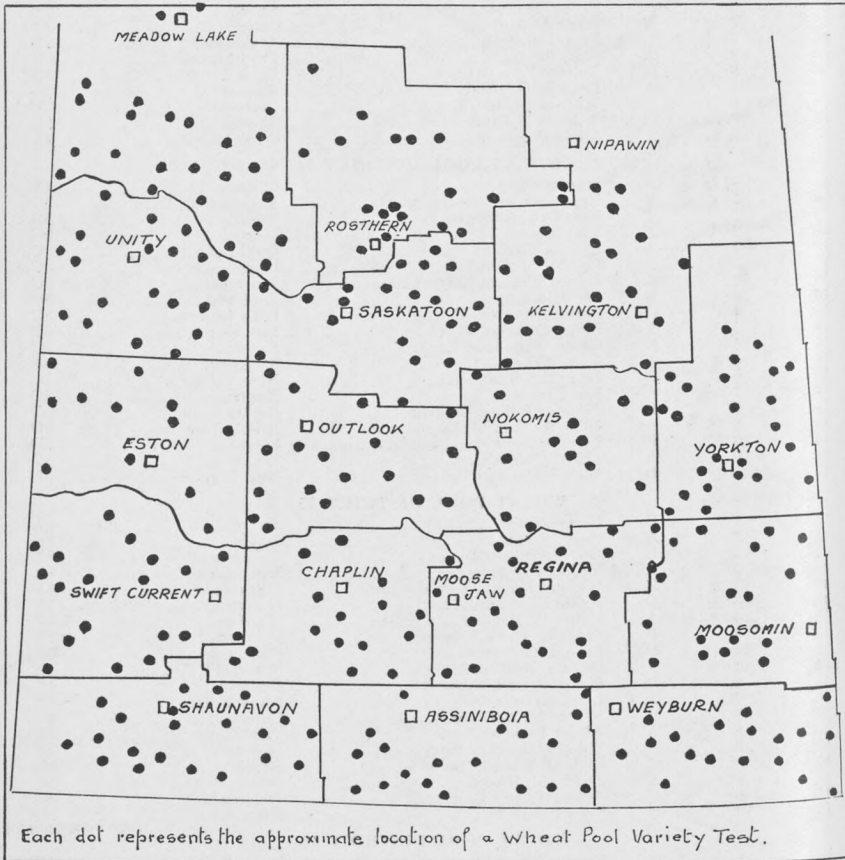


TABLE No. 1.—This table shows the average number of points reporting in each zone, the number of days in each month in which precipitation totalled .01 or more, and the average total precipitation in each month.

Zone	Number Points Reporting	No. of days in each month in which precipitation totalled .01 or more.					Average total precipitation.				
		April	May	June	July	August	April	May	June	July	August
1A.....	16	6	10	9	8	9	.78	1.60	2.20	2.09	2.66
1B.....	3	5	9	7	8	8	.52	1.83	3.45	1.41	2.08
2A.....	7	10	12	13	11	12	1.25	1.67	2.74	2.76	3.02
2B.....	16	5	10	7	8	10	.58	1.89	1.83	1.95	1.82
2C.....	1	4	10	9	5	5	1.59	1.41	3.96	1.50	1.43
2D.....	5	4	10	6	8	10	.40	2.53	1.64	1.29	2.31
3A.....	7	11	12	10	9	10	1.84	1.59	3.17	2.22	2.12
3B.....	1	7	8	5	5	7	1.26	2.48	1.20	.86	.88
3C.....	10	7	9	7	9	9	1.12	1.79	1.81	1.95	2.28
3D.....	3	5	8	7	5	6	1.12	1.29	1.89	.85	1.51
3E.....	9	3	10	7	6	7	.38	2.21	1.40	.89	1.12
4A.....	1	4	7	6	5	6	1.26	1.36	2.24	1.03	1.34
4B.....	2	1	13	17	12	11	.56	3.92	4.48	3.17	2.52

# HISTOGRAM SHOWING GRAIN YIELD IN BUSHELS PER ACRE

Based on results of satisfactory tests in each zone.

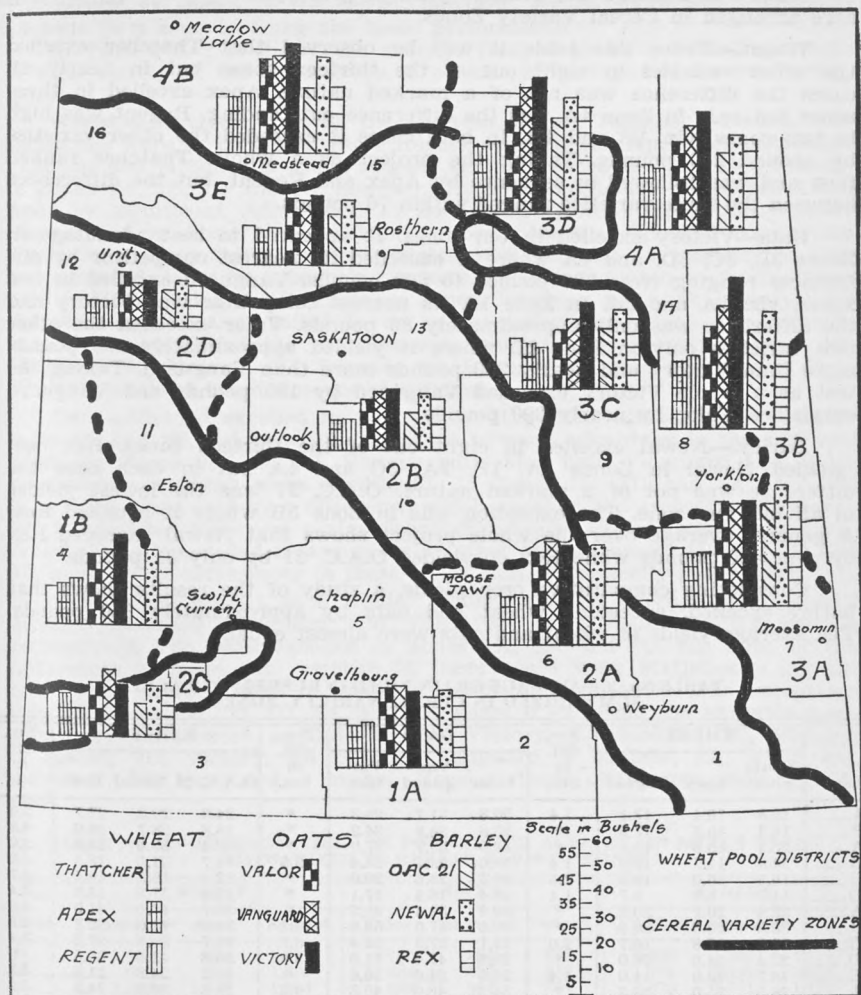


TABLE No. 2.—AVERAGE YIELD GRAIN PLUS STRAW IN POUNDS PER ACRE SUMMARIZED IN CEREAL VARIETY ZONES

Zone	WHEAT			OATS			BARLEY		
	Thatcher	Apex	Regent	Valor	Vanguard	Victory	O.A.C. 21	Newal	Rex
1A.....	2,741	2,725	2,699	2,580	2,909	2,827	2,872	3,208	3,299
1B.....	2,037	2,390	2,504	2,322	2,654	2,800	2,543	3,224	3,273
2A.....	3,072	3,099	3,063	2,914	3,518	3,540	3,718	3,962	4,003
2B.....	2,180	1,834	1,960	1,709	1,955	2,029	1,878	2,424	2,197
2C.....	2,411	2,431	1,750	1,907	2,180	1,839	1,614	2,199	2,179
2D.....	1,765	1,687	1,720	1,831	1,652	1,724	1,828	2,212	2,164
3A.....	3,316	3,264	3,231	3,228	3,475	3,558	3,960	4,556	4,462
3B.....	4,281	4,195	3,995	3,255	4,043	4,358	4,553	5,221	4,553
3C.....	2,540	2,463	2,309	1,913	2,137	2,538	2,564	3,007	3,068
3D.....	3,874	3,770	3,765	2,961	3,506	4,127	3,901	4,356	4,282
3E.....	2,248	2,158	2,226	2,134	2,164	2,347	2,311	2,782	2,741
4A.....	3,328	3,677	3,332	3,060	3,237	3,691	3,605	4,145	4,163
4B.....	3,525	3,587	3,751	2,931	3,378	3,468	3,432	3,996	3,552

## YIELD GRAIN PLUS STRAW IN POUNDS PER ACRE

Table No. 2 shows the average yield of grain plus straw in pounds per acre arranged in Cereal Variety Zones.

**Wheat.**—From this table it will be observed that Thatcher excelled the other varieties in eight out of the thirteen zones but in nearly all cases the difference was not of a marked nature. Apex excelled in three zones but only in Zone 4A was the difference outstanding. Regent was high in two zones, viz. 1B and 4B. In both cases it exceeded the other varieties by around 200 pounds. Taking the project as a whole, Thatcher ranked first and was followed in sequence by Apex and Regent, but the differences between the three varieties ranged within 70 pounds.

**Oats.**—Victory excelled in ten zones. It appeared to best advantage in Zones 3B, 3C, 3D, and 4A where it exceeded its nearest competitor by differences ranging from 300 pounds to 600 pounds. Vanguard excelled in two zones, viz. 1A and 2C. In Zone 1A its nearest competitor was Victory and the difference was only approximately 80 pounds. Valor excelled the other two varieties only in Zone 2D where it yielded approximately 100 pounds more than Victory and nearly 200 pounds more than Vanguard. Taking the test as a whole Victory exceeded Vanguard by 120 pounds and Vanguard outyielded Valor by nearly 300 pounds.

**Barley.**—Newal excelled in eight out of the thirteen zones. Rex outyielded Newal in Zones 1A, 1B, 2A, 3C and 4A but in each zone the difference was not of a marked nature. O.A.C. 21 was the lowest yielder in all but one zone. The exception was in Zone 3B where it equalled Rex. A general average over the whole project shows that Newal exceeded Rex by over 400 pounds while Rex outyielded O.A.C. 21 by only 31 pounds.

Considering comparative crop yields, a study of the results shows that barley excelled, exceeding wheat and oats by approximately 350 pounds. The average yields of wheat and oats were almost equal.

**TABLE No. 3.—AVERAGE GRAIN YIELD IN BUSHELS PER ACRE  
SUMMARIZED IN CEREAL VARIETY ZONES**

Zone	WHEAT			Nec. diff. in bus.	OATS			Nec. diff. in bus.	BARLEY			Nec. diff. in bus.
	That- cher	Apex	Regent		Valor	Van- guard	Victory		O.A.C. 21	Newal	Rex	
1A.....	18.8	16.4	17.1	1.4	30.8	31.7	29.3	*	24.6	29.3	27.7	2.0
1B.....	14.3	15.5	17.5	*	26.8	28.8	34.2	*	18.8	28.7	26.0	6.8
2A.....	20.1	18.8	19.1	*	35.6	39.7	37.9	*	32.4	38.6	33.8	2.0
2B.....	14.9	11.7	12.0	1.4	19.6	22.7	23.4	2.5	14.7	21.5	18.9	2.0
2C.....	16.5	16.0	10.5	2.5	20.5	25.5	20.0	*	12.5	19.5	19.5	3.7
2D.....	11.7	9.9	9.7	1.1	20.4	16.4	17.1	*	13.4	17.3	15.6	3.4
3A.....	22.8	20.1	20.6	*	40.2	39.4	40.5	*	39.7	46.5	41.0	4.0
3B.....	30.3	26.3	28.0	*	39.0	47.0	58.0	11.3	38.0	45.0	32.7	2.8
3C.....	19.8	17.8	16.7	2.0	23.1	27.3	33.4	3.7	23.7	30.8	27.2	3.4
3D.....	27.4	24.6	26.0	*	39.8	47.6	51.0	3.9	35.8	43.6	39.8	*
3E.....	14.7	13.0	14.0	1.4	25.6	24.6	26.6	*	19.2	24.8	21.5	2.3
4A.....	26.3	25.0	23.3	*	34.3	40.0	45.3	9.3	29.3	36.7	34.3	3.9
4B.....	22.4	21.8	22.8	*	36.4	37.2	42.2	*	25.0	37.2	25.6	7.6

\* No significant grain yield differences owing to unusual yield fluctuations.

## YIELD OF GRAIN IN BUSHELS PER ACRE

In analyzing the grain yield results calculations were made on the yield data obtained within each zone to determine the necessary difference between varieties required for odds of at least 19:1 that one variety yielded, under the conditions of the tests and irrespective of soil variability, more than another. If the difference between two varieties equals or exceeds the necessary difference the higher yielding variety is considered to be significantly higher yielding than the other.

Statistical analysis showed that in several of the zones, the yield variation among the oat varieties as well as among the barley varieties was different in different tests. This was true also, but in lesser degree, with the wheat varieties. Such differences can be expected as the varieties

differ markedly in their response to drought, rain, etc., and conditions are not the same even in two tests thirty miles apart on the same kind of soil. The results as shown in the report, however, are based on the average of all tests in a zone as being the basic performance.

In Table No. 3 is shown the average yield of grain in bushels per acre of each variety of the three crops. The table is arranged in Cereal Variety Zones.

**Wheat.**—In eleven out of the thirteen zones, Thatcher excelled. The exceptions were in Zone 1B, where Regent excelled and Apex also outyielded Thatcher and in Zone 4B where Regent again exceeded the Thatcher variety. In Zones 1A, 2B, 2D and 3C, however, Thatcher outyielded both Regent and Apex by significant differences. In Zone 2C it yielded significantly above Regent and in Zone 3E significantly above Apex. A general comparison of all tests shows that Thatcher outyielded Regent by 1.7 bushels per acre and exceeded Apex by 2 bushels per acre. Regent appeared to most advantage in Zones 1B and 4B. In these zones, however, although it outyielded the other varieties, it failed to do so by differences which were significant. Apex outyielded the varieties mentioned in the following zones: 1B, Thatcher; 2C, Regent; 2D, Regent; 3C, Regent; 4A, Regent. Only in Zone 2C, however, was the difference significant.

**Oats.**—Victory excelled in nine zones. It yielded comparatively well in zones 1B and 2B, but generally appeared to most advantage in the east and north. In Zones 3B and 3C, Victory outyielded both Vanguard and Valor by differences which were significant. In Zones 2B, 3D and 4A, it failed to outyield Vanguard by a difference which equalled the necessary difference but it exceeded Valor by a significant difference. While, as we have mentioned, Victory excelled in a number of other zones, namely 1B, 3A, 3E and 4B, none of the differences in these zones were statistically significant.

Taking the project as a whole, Victory with an average yield of 32.2 bushels, exceeded Vanguard and Valor by 1.3 bushels and 3.2 bushels respectively. Vanguard excelled in Zones 1A, 2A and 2C, but none of the differences between oat varieties in these zones were statistically significant. Valor ranked third in yielding ability in most zones. The exceptions were in Zones 1A, 2C, 2D, 3A, and 3E where it exceeded the varieties mentioned by differences as follows: 1A, Victory, 1.5 bushels; 2C, Victory, .5 bushel; 2D, Victory, 3.3 bushels, Vanguard, 4 bushels; 3A, Vanguard, .8 bushel; 3E, Vanguard, 1 bushel. None of these differences were significant.

TABLE No. 4.—AVERAGE YIELD IN POUNDS PER ACRE GRAIN MINUS HULLS  
SUMMARIZED IN CEREAL VARIETY ZONES

Zones	WHEAT			OATS			BARLEY		
	Thatcher	Apex	Regent	Valor	Vanguard	Victory	O.A.C. 21	Newal	Rex
1A.....	1,128	983	1,024	785	754	698	1,039	1,227	1,171
1B.....	859	930	1,050	684	686	813	795	1,211	1,098
2A.....	1,207	1,129	1,144	908	944	901	1,370	1,631	1,428
2B.....	896	702	720	499	540	556	621	906	800
2C.....	990	960	630	523	607	476	528	823	823
2D.....	703	592	583	520	390	408	566	729	657
3A.....	1,372	1,207	1,237	1,026	936	964	1,679	1,964	1,732
3B.....	1,820	1,580	1,680	994	1,118	1,380	1,605	1,901	1,379
3C.....	1,190	1,070	1,000	589	650	795	999	1,299	1,147
3D.....	1,644	1,476	1,560	1,014	1,132	1,214	1,512	1,841	1,681
3E.....	882	780	843	652	585	633	809	1,048	906
4A.....	1,580	1,500	1,400	875	952	1,078	1,239	1,548	1,450
4B.....	1,344	1,308	1,368	928	885	1,004	1,056	1,570	1,080

**Barley.**—In twelve out of the thirteen zones, Newal excelled and in the remaining zone, (Zone 2C), it equalled Rex and outyielded O.A.C. 21. In Zones 2A, 2B, 3A, 3B, 3C, 3E and 4B, Newal outyielded both Rex and O.A.C. 21 by significant differences. In Zones 1A, 1B, 2C, 2D, 3D and 4A, Newal failed to exceed Rex by differences which equalled the necessary differences, but in each zone Newal significantly outyielded O.A.C. 21. Taking the project as a whole, Newal showed an average yield of 30.6 bushels,

outyielding Rex by 3.6 bushels and O.A.C. 21 by 6.4 bushels. With the exception of Zone 2C, where it equalled Newal, and Zone 3B where it was exceeded by both Newal and O.A.C. 21, Rex was second in yielding ability in all zones. In the following zones, Rex outyielded the O.A.C. 21 variety by significant differences: 1A, 1B, 2B, 2C, 3C, 3E and 4A. O.A.C. 21 was low in yield in all zones with the exception of Zone 3B. In the latter zone it ranked second to Newal and exceeded Rex by a difference which was significant.

### YIELD GRAIN MINUS HULLS IN POUNDS PER ACRE

As the number of pounds per bushel of the three crops are different in each instance, the most useful feed yield comparisons are those made on a hull free basis in pounds per acre. Table No. 4 shows the average yield in pounds per acre of each variety of the three crops after making allowance for hulls of oats and barley. In adjusting grain yields to kernel yields, the percentage of hulls was based on arbitrary figures as follows: Valor oats 25%, Victory and Vanguard oats 30%; Barley varieties 12%.

From the table it will be observed that Valor, because of its thin hulls, showed some gain, when considered on a hull-free basis. As the percentage of hulls for barley was similar in all varieties, the kernel yield was proportionate to the grain yield in each variety. A general comparison between the three crops showed that on a hull-free basis, barley exceeded wheat and oats by differences of 6.4% and 50.7%, respectively. When wheat and oats are compared, a general average showed that in kernel yield, wheat exceeded oats by 41.7%. These results are for one year only and the reader should keep in mind the fact that the dryness of 1941 may have affected oats more adversely than either wheat or barley.

TABLE No. 5.—AVERAGE YIELD OF STRAW IN POUNDS PER ACRE  
SUMMARIZED IN CEREAL VARIETY ZONES

Zone	WHEAT			OATS			BARLEY		
	Thatcher	Apex	Regent	Valor	Vanguard	Victory	O.A.C. 21	Newal	Rex
1A.....	1,608	1,736	1,677	1,528	1,824	1,825	1,729	1,810	1,964
1B.....	1,173	1,457	1,460	1,406	1,673	1,728	1,637	1,838	2,023
2A.....	1,886	1,971	1,912	1,698	2,162	2,249	2,129	2,105	2,380
2B.....	1,281	1,134	1,214	1,039	1,180	1,232	1,167	1,392	1,285
2C.....	1,435	1,485	1,109	1,191	1,304	1,146	1,017	1,262	1,247
2D.....	1,064	1,097	1,126	1,129	1,088	1,141	1,190	1,372	1,409
3A.....	1,941	2,051	1,989	1,862	2,135	2,178	2,046	2,322	2,484
3B.....	2,459	2,607	2,295	1,919	2,781	2,388	2,728	3,050	2,999
3C.....	1,350	1,389	1,306	1,130	1,205	1,401	1,422	1,529	1,762
3D.....	2,232	2,296	2,201	1,609	1,878	2,390	2,183	2,266	2,368
3E.....	1,360	1,375	1,381	1,260	1,329	1,442	1,384	1,590	1,710
4A.....	1,751	2,165	1,926	1,897	1,879	1,911	2,206	2,403	2,503
4B.....	2,167	2,280	2,378	1,692	2,114	2,035	2,214	2,212	2,321

### YIELD STRAW IN POUNDS PER ACRE

In Table No. 5 is shown the average yield of straw in pounds per acre arranged in Cereal Variety Zones.

**Wheat.**—Apex exceeded the other varieties in eight out of the thirteen zones. The most outstanding difference was in Zone 3B where Apex exceeded Thatcher and Regent by differences of 148 pounds and 312 pounds respectively. Regent outyielded the other varieties in Zones 1B, 2D, 3E and 4B, but the differences were not of a marked nature. The only zone in which Thatcher excelled was in 2B where it exceeded the other varieties by approximately 100 pounds. Taking the project as a whole, Apex exceeded Regent and Thatcher by differences of 36 pounds and 66 pounds respectively.

**Oats.**—In ten zones Victory exceeded the other varieties and in two out of the other three zones it ranked second to Vanguard. Only in Zone 2C was Victory exceeded by both of the other varieties. Vanguard excelled

in 2C, 3B and 4B. It appeared most outstanding in Zone 3B where it exceeded both Victory and Valor by nearly 400 and 862 pounds respectively. Valor ranked second in straw yield in Zones 2C, 2D and 4A but in all other zones it was the lowest yielder. Taking the project as a whole, Victory exceeded Vanguard by 66 pounds and outyielded Valor by nearly 300 pounds.

**Barley.**—Rex excelled in ten zones and in the other three zones it ranked second to Newal. In the zones where Newal led in straw yield the difference between Newal and Rex was not of a marked nature. Generally, however, Newal ranked second to Rex. In eleven zones O.A.C. 21 was low. It showed its best comparative straw yields in Zones 2A and 4B where it exceeded Newal by very slight differences. A general average covering the entire test showed that Rex exceeded Newal by 120 pounds and outyielded O.A.C. 21 by 258 pounds.

TABLE No. 6.—AVERAGE NUMBER OF DAYS FROM SOWING TO RIPENING  
SUMMARIZED IN CEREAL VARIETY ZONES

Cereal Variety Zone	WHEAT			OATS			BARLEY		
	Thatcher	Apex	Regent	Valor	Vanguard	Victory	O.A.C. 21	Newal	Rex
1A.....	90.4	91.3	90.9	79.2	83.9	90.7	83.9	84.4	85.4
1B.....	94.4	94.6	93.8	88.1	90.9	92.3	90.1	89.9	90.9
2A.....	88.0	88.4	87.1	74.7	83.4	87.1	80.5	82.2	81.2
2B.....	87.8	87.7	87.3	81.0	85.6	88.4	84.2	84.4	84.8
2C.....	90.0	91.0	89.3	75.7	82.3	88.7	85.3	80.0	83.0
2D.....	88.6	88.6	87.2	80.4	84.6	89.0	82.6	81.2	84.4
3A.....	86.2	86.4	85.2	75.9	82.4	87.5	78.4	80.5	81.7
3B.....	88.2	88.5	88.2	82.5	86.7	88.7	83.7	84.0	84.5
3C.....	86.1	88.0	85.1	77.8	86.1	86.8	83.8	83.7	85.3
3D.....	92.2	93.0	91.2	80.2	86.0	92.0	85.2	85.7	85.5
3E.....	89.5	90.2	88.7	80.4	86.2	89.2	83.3	83.7	85.2
4A.....	87.5	87.0	86.0	81.0	88.0	88.0	84.0	85.0	85.5
4B.....	93.0	93.0	92.0	79.0	87.5	89.0	85.5	82.5	89.5

#### AVERAGE NUMBER OF DAYS FROM SOWING TO RIPENING

Table No. 6 shows the average number of days required by each of the varieties of the three crops from the date of sowing to ripening. The table is arranged in Cereal Variety Zones.

**Wheat.**—It will be observed that with two exceptions, Regent ripened earlier than the other varieties. The exceptions were in Zone 1A where Thatcher exceeded Regent in its maturity period by .5 day and in Zone 3B where Regent and Thatcher tied. Taking the project as a whole Regent required an average of 88.7 days from sowing to ripening, exceeding Thatcher by .5 day and Apex by 1 day. In Zones 2D and 4B, Thatcher and Apex tied and in Zones 2B and 4A Apex ripened earlier than Thatcher by slight differences but in all other zones Thatcher showed a somewhat shorter maturity period.

**Oats.**—A study of this table will illustrate in a striking manner the early maturing characteristic of Valor. In all zones it ripened earlier than Vanguard, its nearest competitor, by differences which ranged from 2.8 days in Zone 1B to 8.7 days in Zone 2A. Compared to Victory it was earlier by differences ranging from 4.2 days in Zone 1B to 13 days in Zone 2C. Over the whole project it exceeded Vanguard and Victory in "earliness" by differences of 6.5 days and 9.7 days respectively. In Zone 4A, Vanguard and Victory appeared to tie in "earliness" but in all other zones Vanguard exceeded Victory by differences which ranged from .7 day in Zone 3C to 6.8 days in Zone 1A. Taking the project as a whole Vanguard required an average of 86 days to reach maturity, ripening 3.2 days earlier than Victory.

**Barley.**—In eight out of the thirteen zones O.A.C. 21 exceeded Newal in its maturity period but with the exception of Zones 2A, 3A and 4A, where O.A.C. 21 exceeded Newal by 1 day to 2.1 days the difference between these two varieties was not of a marked nature and over the whole project, while O.A.C. 21 was the earliest variety, it exceeded Newal by only .2 day. Rex was later than the other varieties in ten out of the thirteen zones but.

the most marked difference was in Zone 4B where it was 4 days later than O.A.C. 21 and 7 days later than Newal. Taking the tests as a whole, Newal and O.A.C. 21 exceeded Rex in "earliness" by 1 day and 1.2 days respectively.

TABLE No. 7.—AVERAGE PLANT HEIGHT IN INCHES  
SUMMARIZED IN CEREAL VARIETY ZONES

Cereal Variety Zone	WHEAT			OATS			BARLEY		
	Thatcher	Apex	Regent	Valor	Vanguard	Victory	O.A.C. 21	Newal	Rex
1A.....	25.6	26.4	25.6	24.4	25.8	28.0	26.1	26.1	25.2
1B.....	25.1	27.6	25.2	24.6	26.6	29.5	26.1	26.5	26.5
2A.....	30.1	31.0	30.9	29.3	30.8	33.2	31.9	31.0	30.8
2B.....	22.0	22.1	21.8	20.3	21.6	23.8	21.3	22.3	21.8
2C.....	24.0	24.6	21.3	21.3	23.3	26.3	21.3	21.7	20.7
2D.....	19.7	20.0	17.5	20.6	18.0	20.6	18.2	21.1	20.0
3A.....	28.0	28.3	26.9	27.5	27.8	30.6	28.9	28.3	27.6
3B.....	27.6	29.4	25.8	21.6	26.0	31.8	23.4	24.6	24.4
3C.....	24.5	26.6	26.9	23.6	25.5	27.7	24.6	25.5	24.7
3D.....	26.0	26.5	24.8	24.5	24.3	28.0	24.5	25.2	25.2
3E.....	24.8	26.0	25.4	25.1	23.5	26.3	25.0	25.8	24.5
4A.....	24.4	24.8	22.0	20.2	20.8	24.2	21.4	21.4	22.6
4B.....	27.9	29.1	30.1	25.3	27.5	28.8	30.0	28.6	26.1

### HEIGHT OF PLANTS

In Table No. 7 the height in inches of the three varieties of the different crops is shown by Cereal Variety Zones.

**Wheat.**—In eleven out of the thirteen zones Apex excelled in height and taking the project as a whole it exceeded Thatcher and Regent by .8 inch and .9 inch respectively. It showed most superiority in Zone 1B where it exceeded the other varieties by almost 2.5 inches. In eight zones Thatcher excelled Regent but a general comparison over the whole project shows that it was only slightly taller than the latter variety. Regent appeared to most advantage in this characteristic in Zones 3C and 4B.

**Oats.**—With the exception of one zone (Zone 2D, where it tied with Valor) Victory excelled. In most zones it was decidedly taller than Vanguard or Valor and taking the project as a whole it exceeded these varieties by differences of 2.6 inches and 3.5 inches respectively. Vanguard was exceeded by Valor in only three zones and over the whole project it was almost one inch taller than the latter variety. Valor exhibited its best comparative height in Zone 2D (where it equalled Victory and exceeded Vanguard) and Zone 3E (where it exceeded Vanguard). It also exceeded Vanguard in Zone 3D but the difference was only of a slight nature.

**Barley.**—More variation appeared between the comparative heights of the barley varieties than of the other crops. In nine zones, however, Newal



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equalled or excelled the other varieties and over the whole test it exceeded O.A.C. 21 and Rex by differences of .3 inch and .7 inch respectively.

Taking the project as a whole little difference appeared between the comparative heights of Rex and O.A.C. 21 but some variations were observed in the different zones. Rex appeared to most advantage in height in Zones 2D, 3B and 4A, while O.A.C. 21 was distinctly taller than Rex in Zones 2A, 3A and 4B.

TABLE No. 8.—COMPARISON OF STRAW STRENGTH  
SUMMARIZED IN CEREAL VARIETY ZONES

Cereal Variety Zone	WHEAT			OATS			BARLEY		
	Thatcher	Apex	Regent	Valor	Vanguard	Victory	O.A.C. 21	Newal	Rex
1A.....	9.1	8.8	9.0	9.0	9.2	9.1	8.7	8.9	9.1
1B.....	8.9	9.6	9.2	9.1	9.4	9.5	9.1	9.1	9.5
2A.....	9.5	9.3	9.2	9.6	9.6	9.8	9.0	9.0	9.2
2B.....	9.3	9.1	9.0	8.9	9.1	8.9	8.7	8.9	9.0
2C.....	9.7	9.6	9.4	9.3	9.1	9.6	9.0	8.9	9.3
2D.....	8.9	8.9	8.8	9.2	9.1	8.7	9.3	8.9	9.3
3A.....	9.8	9.5	9.3	9.8	9.6	9.3	7.9	9.1	8.7
3B.....	9.2	8.9	8.8	8.8	8.8	9.3	8.8	9.3	9.0
3C.....	9.2	9.1	9.0	8.8	8.9	8.9	8.5	8.7	8.7
3D.....	9.1	8.8	8.3	8.8	8.8	8.8	8.5	8.7	8.8
3E.....	9.5	9.3	9.3	9.2	9.2	9.3	9.2	9.2	9.2
4A.....	9.8	9.7	9.7	9.7	9.7	9.3	9.7	9.7	9.8
4B.....	7.4	7.1	6.7	7.2	7.3	6.5	7.1	7.9	7.4

### STRAW STRENGTH

Straw strength was reported on the basis of 0 to 10, 10 being recorded if the plants were straight and erect. If the plants tended to lean slightly or were slightly curved at the base, the straw strength would be shown as 9; the greater the lean, the greater proportion of leaning plants, the lower the figure shown until, if the plants were flat upon the ground, they would receive 0 for straw strength.

Table No. 8 shows the strength of straw of the different varieties of the three crops. This table is arranged in Cereal Variety Zones and is based on the markings 0 to 10 as mentioned above.

**Wheat.**—With the exception of two zones, Thatcher was superior in this characteristic. The exceptions were in 1B where it was decidedly inferior to Apex and Regent and in Zone 2D where it tied with Apex and was only slightly superior to Regent. Taking the project as a whole, however, Thatcher showed superiority. In previous tests Apex has shown some inferiority to Regent but on reference to the table the reader will observe that in this test Apex was superior to Regent in ten zones. It tied with Regent in Zones 3E and 4A. Only in Zone 1A was it slightly inferior. It may be mentioned that in these tests the new strain of Regent, viz. 975.6 was used.

**Oats.**—While some variation occurred in the comparative straw strengths of the oat varieties in the different zones, taking the test as a whole the three varieties were almost equal in this characteristic. A general comparison over the whole test shows that Vanguard was slightly superior to Victory and Valor.

**Barley.**—In seven out of the thirteen zones, Rex was superior to Newal or O.A.C. 21, and in three zones it tied with the latter varieties. Newal was superior to O.A.C. 21 in most zones. Taking the test as a whole, Rex excelled but was followed closely by Newal and O.A.C. 21 in order named.

### NECK STRENGTH

Neck strength of barley was reported on the basis of strong, medium, and weak. If the neck was satisfactory, the figure "1" was used. If only a few of the stems broke at the neck then "2" was shown as the neck strength. If numerous heads drooped or fell off the figure "3," indicating weak, was used. Thus the smaller the figure shown the stronger the neck appeared.

Table No. 9 shows the strength of the necks of the three barley varieties based on the markings mentioned. From this table it will be observed that with one exception Rex excelled in all zones. The exception was in Zone 2C where it was reported to be inferior to the other varieties. Some variation appeared between the comparative neck strengths of Newal and O.A.C. 21 in the different zones, but of these two varieties Newal appeared to be slightly superior. A general average over the whole test showed that Rex excelled. Newal ranked second but it was followed closely by O.A.C. 21.

TABLE No. 9.—NECK STRENGTH OF BARLEY  
SUMMARIZED IN CEREAL VARIETY ZONES

Zone	O.A.C. 21	Newal	Rex
1A.....	2.1	2.0	1.6
1B.....	2.2	2.2	1.9
2A.....	1.7	2.0	1.9
2B.....	2.1	1.9	1.5
2C.....	1.3	1.3	2.0
2D.....	2.1	2.0	1.4
3A.....	2.8	2.6	2.2
3B.....	1.8	1.6	1.3
3C.....	2.0	1.8	1.6
3D.....	1.8	1.8	1.6
3E.....	1.7	1.8	1.5
4A.....	1.8	1.9	1.6
4B.....	2.0	2.0	1.6

### WEIGHT PER MEASURED BUSHEL

Table No. 10 shows the average weight per measured bushel arranged in Cereal Variety Zones. All weights were taken on cleaned samples.

**Wheat.**—Apex excelled in all zones and taking the project as a whole, it outweighed Thatcher by .9 pound and Regent by 1 pound. Some slight variations appeared between the weights of Thatcher and Regent in the different zones but as it will be observed, a general average over the entire test showed that these varieties were almost equal.

TABLE No. 10.—BUSHEL WEIGHT IN POUNDS (CLEANED)  
BY CEREAL VARIETY ZONES

Zones	WHEAT			OATS			BARLEY		
	Thatcher	Apex	Regent	Valor	Vanguard	Victory	O.A.C. 21	Newal	Rex
1A.....	60.3	61.3	60.1	34.8	33.9	35.7	45.1	45.8	49.6
1B.....	61.3	62.4	61.4	33.2	31.9	33.8	45.8	46.3	50.6
2A.....	59.8	61.0	60.0	35.2	33.6	34.9	46.0	46.0	49.5
2B.....	61.1	61.2	60.1	30.8	30.8	31.8	44.9	45.5	49.1
2C.....	62.0	62.5	61.0	37.5	36.7	37.7	48.2	48.8	52.3
2D.....	59.8	61.6	60.0	34.3	31.3	31.8	45.8	45.3	49.2
3A.....	61.0	61.8	61.3	35.9	33.9	35.8	47.3	47.5	50.7
3B.....	62.8	63.0	62.6	37.9	37.1	38.8	48.9	48.8	50.6
3C.....	62.2	62.9	61.9	36.5	35.4	38.1	46.0	46.7	50.0
3D.....	63.5	64.0	63.3	38.4	35.2	38.7	48.6	49.2	51.9
3E.....	59.6	61.3	60.2	34.1	32.2	33.2	44.8	45.8	49.6
4A.....	63.5	64.1	63.6	37.8	36.0	36.8	48.9	48.9	51.7
4B.....	60.7	61.6	60.9	35.9	33.4	35.8	45.1	45.8	49.6

**Oats.**—In seven out of the thirteen zones, Victory excelled but in the other six zones Valor outweighed the other varieties and taking the tests as a whole Victory exceeded Valor by only .3 pound. With the exception of Zone 2B, where it tied with Valor, Vanguard was low in bushel weight in all zones and a general average showed that it was outweighed by both Valor and Victory by differences of 1.3 and 1.6 pounds respectively.

**Barley.**—Rex was decidedly superior in weight to the other varieties in all zones and a general average over the entire test showed that it outweighed Newal and O.A.C. 21 by 3.7 and 4.1 pounds respectively. In general, Newal was the second highest weighing variety. The exceptions were in

Zones 2A and 4A where it tied with O.A.C. 21 and in Zones 2D and 3B where O.A.C. 21 exceeded Newal by slight differences. Taking the test as a whole, however, Newal outweighed O.A.C. 21 by a difference of nearly .5 pound.

TABLE No. 11.—PERCENTAGE COMMERCIAL GRADES BY VARIETIES

WHEAT	% 1 Hd.	% 1°	% 2°	% 3°	% 4°	% 4 Spe.	% No. 5	% No. 6	% Fd.
Thatcher.....	2.4	41.6	32.4	14.3	4.4	....	4.5	.2	.2
Apex.....	9.2	49.4	28.4	7.0	4.4	....	1.2	.2	.2
Regent.....	1.8	31.8	43.9	14.1	3.2	.3	4.5	....	.4
OATS	1 C.W.	2 C.W.	3 C.W.	3 C.W.	X 1 Fd.	1 Fd.	2 Fd.	3 Fd.	
Valor.....	2.4	33.9	....	30.6	1.4	11.4	10.2	10.1	
Vanguard.....	3.6	24.4	....	29.5	....	7.8	25.8	8.9	
Victory.....	6.1	33.8	.5	21.7	....	7.3	22.7	7.9	
BARLEY	1 C.W.	2 C.W.	3 C.W.	1 Fd.	2 Fd.	3 Fd.	Rj. Mxd.	Htd.	
O.A.C. 21.....	5.0	23.5	28.9	13.3	17.8	11.5	....		
Newal.....	....	....	60.2	13.8	17.8	8.2	....		
Rex.....	17.6	53.5	1.5	20.4	5.2	1.4	.4		

### COMMERCIAL GRADES

Table No. 11 shows the commercial grades placed on each of the varieties of the three crops.

**Wheat.**—From this table the reader will observe that Apex excelled in commercial grades, nearly 59% grading 1 Hard and 1 Nor. Generally its superior bushel weight and the fact that it showed less defects, particularly bleached and green kernels, than the other varieties, was responsible for its grade superiority. Thatcher, while weighing fairly well, was badly bleached and many samples contained an abundance of green immature kernels. It ranked second to Apex in commercial grades, 44% being placed in the statutory grades, 1 Hard and 1 Nor. Green and bleached kernels appeared in many of the Regent samples and although bleach was not so marked in this variety as in Thatcher, it was more apparent in Regent than in Apex. These defects, together with decidedly lower weight, resulted in Regent being inferior to either of the other varieties in commercial grades. 34% of the Regent variety graded 1 Hard and 1 Nor.

**Oats.**—Light weight and immature kernels were in evidence in many samples of all varieties, and in a number of samples of Vanguard and Victory weathered kernels also appeared, Victory appearing to be more affected than Vanguard. Taking the project as a whole, however, Valor showed less defects than either of the other varieties and this fact combined with comparatively good weight, resulted in Valor excelling in commercial grades, 67% grading within the statutory grades 1 CW to 3CW. In general, Victory exceeded Vanguard in weight and was slightly superior to the latter variety in commercial grades. 62% of the Victory variety graded 1 CW to 3 CW, while 57.5% of the Vanguard variety was placed in these grades.

**Barley.**—Some light weight and also a considerable number of weathered kernels appeared in many samples of the Rex variety but taking the tests as a whole it was comparatively high in bushel weight and graded relatively well, 73% being placed in the statutory grades 1 CW to 3CW. Newal also showed fairly good bushel weight but a number of light weight and shrunken kernels appeared in some tests and these were responsible for the percentage of this variety placed in the lower grades. 60.2% graded 3 CW, which is the highest statutory grade in which this six-rowed, smooth-awned variety can be placed. O.A.C. 21 graded fairly well, a fair percentage being suitable for malting. The percentage placed in the feed classes, was primarily due to light weight, immature or weathered kernels. In general 57.4% of the O.A.C. 21 variety was placed in the statutory grades, 1 CW to 3 CW.

## SUMMARIZATION

### ACCORDING TO CEREAL VARIETY ZONES

Probably the most useful summarization of the data from this series of variety tests is that which shows for each cereal variety zone the data on the different varieties for each important characteristic. In the following tables and discussions the data have been studied on the basis of these Cereal Variety Zones.

Readers are reminded that the results of tests during a single year in a zone, no matter how comprehensive they may be, do not constitute satisfactory information upon which to base the choice of a variety to use. The results of several years of tests are needed. Often a less worthy variety suffers less from the weather conditions in a given season than does a superior variety. Therefore, some reference to previous tests is made in the final comments on the results in each zone.

In this connection the reader is referred to the Saskatchewan Grain Variety Recommendations for 1942, a printed circular available free on request from the Extension Department, University of Saskatchewan, Saskatoon, or the Saskatchewan Department of Agriculture, Regina, or your nearest Dominion Experiment Station or the Saskatchewan Wheat Pool, Regina.

In analyzing the grain yield results calculations were made on the yield data obtained within each zone to determine the "necessary difference" required between varieties for odds of at least 19:1 that one variety yielded, under the conditions of the tests and irrespective of soil variability, more than another. If the difference between two varieties equals or exceeds the necessary difference it is considered to be important; that is the higher yielding variety is considered to be significantly higher yielding than the other. The reader will be interested to know that modern variety tests such as these are planned in a mathematical manner in order (1) that the test will be fair, with all varieties placed and treated as nearly as possible alike, and (2) that the test will be sensitive and reveal statistically any varietal superiority that exists.

It should be mentioned that in nearly all zones the crops differed in their excellence depending on rainfall and other environmental conditions.

A careful study was made to ascertain the advisability of splitting the zones for the purpose of analysing zone sub-divisions but owing to the lack of accurate precipitation records for the various locations this was not considered possible.

It must be stressed, therefore, that in analyzing the grain yield results in the report the averages of all tests in each zone were taken as the basic performance.



A similar sign to the one shown above at the Test of Freddie Walker, of Tadmore, was supplied to each co-operator.

TABLE No. 12.—SUMMARIZED RESULTS FOR ZONE 1A

	WHEAT			OATS			BARLEY		
	Thatcher	Apex	Regent	Valor	Vanguard	Victory	O.A.C. 21	Newal	Rex
Average yield grain plus straw in lbs. per acre.....	2,741	2,725	2,699	2,580	2,909	2,827	2,872	3,208	3,299
Average yield grain in bus. per acre (gross).....	18.8	16.4	17.1	30.8	31.7	29.3	24.6	29.3	27.7
Average grain yield in bus. per acre (minus hulls).....	18.8	16.4	17.1	23.0	22.2	20.5	21.6	25.7	24.3
Average straw yield in lbs. per acre (minus hulls).....	1,128	983	1,024	785	754	638	1,039	1,227	1,171
Average grain yield in lbs. per acre (minus hulls).....	1,608	1,736	1,677	1,528	1,824	1,825	1,729	1,810	1,964
Days from seeding to ripening.....	90.4	91.3	90.9	79.2	83.9	90.7	84.4	84.4	85.4
Height of plants in inches.....	25.6	26.3	25.6	24.4	25.8	28.0	26.1	26.1	25.2
Straw strength.....	9.1	8.8	9.0	9.0	9.2	9.1	8.7	8.9	9.1
Neck strength of barley.....							2.1	2.0	1.6
Bushel weight in lbs.....							45.0	45.7	49.5
Commercial grades in percentage.....									
1°	60.3	61.2	60.0	34.7	33.9	35.6			13
2°	26	36	28	32	15	27	24		49
3°	36	34	38	32	15	37	22	55	3
4°	21	16	13	3 C.W.	39	10	9	7	24
5	9	6	13	1 Fd.	5	10	24	22	9
6	4	4	6	2 Fd.	36	2	21	16	...
Fd.	2	2	2	3 Fd.	5	2			2
	2		2	Rj. Mx. Htd.					

Wheat—Necessary grain yield difference between varieties 1.4 bushels.

Barley—Necessary grain yield difference between varieties.

TABLE No. 13.—SUMMARIZED RESULTS FOR ZONE 1B

	WHEAT			OATS			BARLEY		
	Thatcher	Apex	Regent	Valor	Vanguard	Victory	O.A.C. 21	Newal	Rex
Average yield grain plus straw in lbs. per acre.....	2,037	2,390	2,504	2,322	2,654	2,890	2,543	3,224	3,273
Average grain yield in bus. per acre (gross).....	14.3	15.5	17.5	26.8	28.8	34.2	18.8	28.7	26.0
Average grain yield in bus. per acre (minus hulls).....	14.3	15.5	17.5	20.1	20.2	23.9	16.5	25.2	22.9
Average straw yield in lbs. per acre (minus hulls).....	859	930	1,050	684	686	813	795	1,211	1,098
Average grain yield in lbs. per acre.....	1,173	1,457	1,460	1,406	1,673	1,728	1,637	1,838	2,023
Days from seeding to ripening.....	94.4	94.6	93.8	88.1	90.9	92.3	90.1	89.9	90.9
Height of plants in inches.....	25.1	27.6	25.2	24.6	26.6	29.5	26.1	26.5	26.5
Straw strength.....	8.9	9.6	9.2	9.1	9.4	9.5	9.1	9.5	1.9
Neck strength of Barley.....							2.2	2.2	1.9
Bushel weight in lbs.....							45.8	46.3	50.6
Commercial grades in percentage.....									
1°	61.3	62.4	61.4	33.2	31.9	33.8			40
2°	40	50	50	10	10	10	40		30
3°	30	30	30	30	20	20	20	50	...
4°	10	20	...	10	10	...	20	30	10
5	20	...	20	30	40	...	40	20	20
				3 Fd.	20	20	20	20	...

Wheat—No significant grain yield difference between varieties.

Oats—No significant grain yield difference between varieties.

Barley—Necessary grain yield difference 6.8 bushels.

TABLE No. 14.—SUMMARIZED RESULTS FOR ZONE 2A

	WHEAT			OATS			BARLEY		
	Thatcher	Apex	Regent	Valor	Vanguard	Victory	O.A.C. 21	Newal	Rex
Average yield grain plus straw in lbs. per acre.....	3,072	3,099	3,063	2,914	3,518	3,540	3,718	3,962	4,003
Average grain yield in bus. per acre (gross).....	20.1	18.8	19.1	35.6	39.7	37.9	32.4	38.6	33.8
Average grain yield in bus. per acre (minus hulls).....	20.1	18.8	19.1	26.7	27.8	26.5	28.5	33.9	29.7
Average straw yield in lbs. per acre (minus hulls).....	1,207	1,129	1,144	1,908	1,944	901	1,570	1,631	1,428
Average straw yield in lbs. per acre.....	1,886	1,971	1,912	1,698	2,162	2,249	2,129	2,105	2,380
Days from seedling to ripening.....	88.0	88.4	87.1	74.7	83.4	87.1	80.5	82.2	81.2
Height of plants in inches.....	30.1	31.0	30.9	29.3	30.8	33.2	31.9	31.0	30.8
Straw strength.....	9.5	9.3	9.2	9.6	9.6	9.8	9.0	9.0	9.2
Neck strength of barley.....							1.7	2.0	1.9
Bushel weight in lbs.....	59.8	61.0	60.0	35.2	33.6	34.9	46.0	46.0	49.5
Commercial grades in percentage.....									
1 Hd.....	26	39	26	1 C.W.	18	36	8	...	4
1°	39	35	48	2 C.W.	32	36	36	...	44
2°	31	17	17	3 C.W.	45	36	24	...	4
3°	4	4	...	1 Hd.	9	23	16	20	44
4°	...	...	9	2 Hd.	23	23	16	16	...
5	...	...	...	3 Hd.	5	5	16	16	...
				Kj. Mx. Htd.	...	...	...	...	4

Wheat—No significant grain yield difference between varieties.  
 Barley—Necessary grain yield difference 2 bushels.

TABLE No. 15.—SUMMARIZED RESULTS FOR ZONE 2B

	WHEAT			OATS			BARLEY		
	Thatcher	Apex	Regent	Valor	Vanguard	Victory	O.A.C. 21	Newal	Rex
Average yield grain plus straw in lbs. per acre.....	2,180	1,834	1,960	1,709	1,955	2,029	1,878	2,424	2,197
Average grain yield in bus. per acre (gross).....	14.9	11.7	12.0	19.6	22.7	23.4	14.7	21.5	18.9
Average grain yield in bus. per acre (minus hulls).....	14.9	11.7	12.0	14.7	18.9	16.4	15.4	21.5	18.9
Average straw yield in lbs. per acre (minus hulls).....	896	702	720	499	540	556	621	906	800
Average straw yield in lbs. per acre.....	1,281	1,134	1,214	1,039	1,180	1,232	1,167	1,392	1,285
Days from seedling to ripening.....	87.8	87.7	87.3	81.0	85.6	88.4	84.2	84.4	81.8
Height of plants in inches.....	22.0	22.1	21.8	20.3	21.6	23.8	21.3	22.3	21.8
Straw strength.....	9.3	9.1	9.0	8.9	9.1	8.9	8.7	8.9	9.0
Neck strength of barley.....				...	...	...	2.1	1.9	1.5
Bushel weight in lbs.....	61.1	61.2	60.1	30.8	30.8	31.8	44.9	45.5	49.1
Commercial grades in percentage.....									
1 Hd.....	43	7	25	3	3	3	...	...	8
1°	32	43	43	2 C.W.	3	14	25	...	48
2°	21	28	14	3 C.W.	18	15	15	...	7
3°	4	18	7	1 Hd.	11	11	4	52	18
4°	...	4	4	2 Hd.	39	36	30	30	11
5 Sp.	...	...	4	3 Hd.	29	21	30	14	8
Fd.	...	...	3	...	...	...	...	...	...

Wheat—Necessary grain yield difference between varieties 1.4 bushels.  
 Barley—Necessary grain yield difference between varieties 2.0 bushels.

TABLE No. 16.—SUMMARIZED RESULTS FOR ZONE 2C

	WHEAT			OATS			BARLEY		
	Thatcher	Apex	Regent	Valor	Vanguard	Victory	O.A.C. 21	Neval	Rex
Average yield grain plus straw in lbs. per acre.....	2,411	2,431	1,750	1,907	2,180	1,839	1,614	2,199	2,179
Average grain yield in bus. per acre (gross).....	16.5	16.0	10.5	20.5	25.5	20.0	12.5	19.5	19.5
Average grain yield in bus. per acre (minus hulls).....	16.5	16.0	10.5	15.3	17.8	14.0	11.0	17.1	17.1
Average grain yield in lbs. per acre (minus hulls).....	990	960	630	523	607	476	528	823	823
Average straw yield in lbs. per acre.....	1,435	1,485	1,109	1,191	1,304	1,148	1,017	1,262	1,247
Days from seeding to ripening.....	80.0	81.0	89.3	75.7	82.3	88.7	85.3	80.0	83.0
Height of plants in inches.....	24.0	24.6	21.3	21.3	23.3	26.3	21.3	21.7	20.7
Straw strength.....	9.7	9.6	9.4	9.3	9.1	9.6	9.0	8.9	9.3
Neck strength of barley.....	...	62.5	61.0	37.5	36.7	37.7	48.2	48.8	52.3
Bushel weight in lbs.....	66	100	33	66	33	33	33	...	33
Commercial grades in percentage.....	34	...	67	...	67	34	33	100	67
	1°			1 C.W.			34		...
	2°			2 C.W.					...
				3 C.W.					...
				1 Fd.					...

Wheat—Necessary grain yield difference between varieties 2.5 bushels.

Oats—No significant grain yield difference between varieties.

Barley—Necessary grain yield difference between varieties 3.7 bushels.

TABLE No. 17.—SUMMARIZED RESULTS FOR ZONE 2D

	WHEAT			OATS			BARLEY		
	Thatcher	Apex	Regent	Valor	Vanguard	Victory	O.A.C. 21	Neval	Rex
Average yield grain plus straw in lbs. per acre.....	1,765	1,687	1,720	1,831	1,652	1,724	1,828	2,212	2,164
Average grain yield in bus. per acre (gross).....	11.7	9.9	9.7	20.4	16.4	17.1	13.4	17.3	15.6
Average grain yield in bus. per acre (minus hulls).....	11.7	9.9	9.7	15.3	11.5	11.9	11.8	15.2	13.7
Average grain yield in lbs. per acre (minus hulls).....	703	592	583	520	390	408	566	729	657
Average straw yield in lbs. per acre.....	1,064	1,097	1,126	1,129	1,088	1,141	1,190	1,372	1,409
Days from seeding to ripening.....	88.6	88.6	87.2	80.4	84.6	89.0	82.6	81.2	84.4
Height of plants in inches.....	19.7	20.0	17.5	20.6	18.0	20.6	18.2	21.1	20.0
Straw strength.....	8.9	8.9	8.8	9.2	9.1	8.7	9.3	8.9	9.3
Neck strength of barley.....	59.8	61.6	60.0	34.3	31.3	31.8	45.8	45.3	40
Bushel weight in lbs.....	30	50	...	33	11	...	20	...	40
Commercial grades in percentage.....	40	30	70	22	...	11	20	40	30
	2°			1 C.W.			40		...
	3°			2 C.W.			50		...
	5			1 Fd.			10		...
				2 Fd.			20		...
				3 Fd.			10		...

Wheat—Necessary grain yield difference 1.1 bushels.

Oats—No significant grain yield differences between varieties.

Barley—Necessary grain yield difference 3.4 bushels.

TABLE No. 18.—SUMMARIZED RESULTS FOR ZONE 3A

	WHEAT			OATS			BARLEY		
	Thatcher	Apex	Regent	Valor	Vanguard	Victory	O.A.C. 21	Newal	Rex
Average yield grain plus straw in lbs. per acre.....	3,316	3,264	3,231	3,228	3,475	3,558	3,960	4,556	4,462
Average grain yield in bus. per acre (gross).....	22.8	20.1	20.6	40.2	39.4	40.5	39.7	46.5	41.0
Average grain yield in bus. per acre (minus hulls).....	22.8	20.1	20.6	30.1	27.5	28.3	34.9	40.9	36.0
Average straw yield in lbs. per acre (minus hulls).....	1,372	1,207	1,237	1,026	936	964	1,679	1,964	1,732
Average straw yield in lbs. per acre.....	1,941	2,051	1,989	1,862	2,135	2,178	2,046	2,322	2,484
Days from seeding to ripening.....	86.2	86.4	85.2	75.9	82.4	87.5	78.4	80.5	81.7
Height of plants in inches.....	28.0	28.3	26.9	27.5	27.8	30.6	28.9	28.3	27.6
Straw strength.....	9.8	9.5	9.3	9.8	9.6	9.3	7.9	9.1	8.7
Neck strength of barley.....			61.3	35.9	33.9	35.8	2.8	2.6	2.2
Bushel weight in lbs.....	1 Hd.	61.8	7	1 C.W.			47.3	47.5	50.7
Commercial grades in percentage.....	1°		44	36	29	14	38	....	13
	2°	38	19	Ex. 3 C.W.		7	....	....	50
	3°	31	20	3 C.W.	14	29	25	69	6
	4°	12	6	1 Fd.	....	14	12	19	25
	5	19	12	2 Fd.	50	36	25	6	6

Wheat—No significant grain yield difference between varieties.

Oats—No significant grain yield difference between varieties.

Barley—Necessary grain yield difference 4.0 bushels.

TABLE No. 19.—SUMMARIZED RESULTS FOR ZONE 3B

	WHEAT			OATS			BARLEY		
	Thatcher	Apex	Regent	Valor	Vanguard	Victory	O.A.C. 21	Newal	Rex
Average yield grain plus straw in lbs. per acre.....	4,281	4,195	3,995	3,255	4,043	4,358	4,553	5,221	4,553
Average grain yield in bus. per acre (gross).....	30.3	26.3	28.0	39.0	47.0	58.0	38.0	43.0	32.7
Average grain yield in bus. per acre (minus hulls).....	30.3	26.3	28.0	29.2	32.9	40.6	33.4	39.6	28.7
Average straw yield in lbs. per acre (minus hulls).....	1,820	1,580	1,680	994	1,118	1,380	1,605	1,901	1,379
Average straw yield in lbs. per acre.....	2,459	2,607	2,295	1,019	2,781	2,388	2,728	3,050	2,999
Days from seeding to ripening.....	88.2	88.5	88.2	82.5	86.7	88.7	83.7	84.0	84.5
Height of plants in inches.....	27.6	29.4	25.8	21.6	26.0	31.8	23.4	24.6	24.4
Straw strength.....	9.2	8.9	8.8	8.8	8.8	9.3	8.8	9.3	9.0
Neck strength of barley.....			62.6	37.9	37.1	38.8	1.8	1.6	1.3
Bushel weight in lbs.....	1°	63.0	50	2 C.W.	25	75	48.9	48.8	50.6
Commercial grades in percentage.....	2°	25	50	3 C.W.	25	25	25	....	75
	3°	25	50	1 Fd.	75	25	50	100	....

Wheat—No significant grain yield differences between varieties.

Oats—Necessary grain yield difference 11.3 bushels.

Barley—Necessary grain yield difference 2.8 bushels.

TABLE No. 20.—SUMMARIZED RESULTS FOR ZONE 3C

	WHEAT				OATS			BARLEY		
	Thatcher	Apex	Regent		Valor	Vanguard	Victory	O.A.C. 21	Newal	Rex
Average yield grain plus straw in lbs. per acre.....	2,540	2,463	2,309		1,913	2,137	2,538	2,564	3,007	3,068
Average grain yield in bus. per acre (gross).....	19.8	17.8	16.7		23.1	27.3	33.4	23.7	30.8	27.2
Average grain yield in bus. per acre (minus hulls).....	19.8	17.8	16.7		17.3	19.1	23.4	20.8	27.1	23.9
Average straw yield in lbs. per acre (minus hulls).....	1,190	1,070	1,000		589	650	795	999	1,249	1,147
Days from seedling to ripening.....	1,350	1,389	1,306		1,130	1,205	1,401	1,422	1,529	1,762
Height of plants in inches.....	86.1	88.0	85.1		77.8	86.1	86.8	83.8	83.7	85.3
Straw strength.....	24.5	26.6	26.9		23.6	25.5	27.7	24.6	25.5	24.7
Neck strength of barley.....	9.2	9.1	9.0		8.8	8.9	8.9	8.5	8.7	8.7
Bushel weight in lbs.....	62.2	62.9	61.9		36.5	35.4	38.1	2.0	1.8	1.6
Commercial grades in percentage.....		4		1 C.W.				46.0	46.7	50.0
	71	80	33	2 C.W.	50	50	69	4		94
	21	8	54	3 C.W.	25	25	19	36	64	
	8	8	13	1 Fd.	18	13	6	16	20	28
				2 Fd.			6	12	4	4
				3 Fd.	7	6		12	12	

Wheat—Necessary grain yield difference 2.0 bushels.

Oats—Necessary grain yield difference 3.7 bushels.

Barley—Necessary grain yield difference 3.4 bushels.

TABLE No. 21.—SUMMARIZED RESULTS FOR ZONE 3D

	WHEAT				OATS			BARLEY		
	Thatcher	Apex	Regent		Valor	Vanguard	Victory	O.A.C. 21	Newal	Rex
Average yield grain plus straw in lbs. per acre.....	3,874	3,770	3,765		2,961	3,506	4,127	3,901	4,356	4,282
Average grain yield in bus. per acre (gross).....	27.4	24.6	26.0		39.8	47.6	51.0	35.8	43.6	39.8
Average grain yield in bus. per acre (minus hulls).....	27.4	24.6	26.0		29.8	33.3	35.7	31.5	38.3	35.0
Average straw yield in lbs. per acre (minus hulls).....	1,644	1,476	1,560		1,014	1,132	1,214	1,512	1,841	1,681
Average straw yield in lbs. per acre.....	2,232	2,296	2,201		1,609	1,878	2,390	2,183	2,266	2,368
Days from seedling to ripening.....	92.2	93.0	91.2		80.2	86.0	92.0	85.2	85.7	85.5
Height of plants in inches.....	26.0	26.5	24.8		24.5	24.3	28.0	24.5	25.2	25.2
Straw strength.....	3.1	8.8	8.3		8.8	8.8	8.8	8.5	8.7	8.8
Neck strength of barley.....	63.5	64.0	63.3		38.4	35.2	38.7	1.8	1.8	1.6
Bushel weight in lbs.....	17	50	17	1 C.W.			20	48.6	49.2	51.9
Commercial grades in percentage.....	67	33	67	2 C.W.	100	60	60	50		33
			16	3 C.W.		20		50	100	67
	16			1 Fd.			20			
		17		2 Fd.		20				

Wheat—No significant grain yield difference between varieties.

Oats—Necessary grain yield difference 3.9 bushels.

Barley—No significant grain yield difference between varieties.

TABLE No. 22.—SUMMARIZED RESULTS FOR ZONE 3E

	WHEAT			OATS			BARLEY		
	Thatcher	Apex	Regent	Valor	Vanguard	Victory	O.A.C. 21	Neval	Rex
Average yield grain plus straw in lbs. per acre.....	2,248	2,158	2,226	2,134	2,164	2,347	2,311	2,782	2,741
Average grain yield in bus. per acre (gross).....	14.7	13.0	14.0	25.6	24.6	26.6	19.2	24.8	21.5
Average grain yield in bus. per acre (minus hulls).....	14.7	13.0	14.0	19.2	17.2	18.6	16.9	21.8	18.9
Average straw yield in lbs. per acre (minus hulls).....	1,882	780	843	632	585	633	809	1,048	906
Average grain yield in lbs. per acre.....	1,360	1,375	1,381	1,260	1,329	1,442	1,384	1,590	1,710
Days from seeding to ripening.....	89.5	90.2	88.7	80.4	86.2	89.2	83.3	83.7	85.2
Height of plants in inches.....	24.8	26.0	25.1	25.1	23.5	26.3	25.0	25.8	24.5
Straw strength.....	9.5	9.3	9.3	9.2	9.2	9.3	9.2	9.2	9.2
Neck strength.....	...	...	...	...	...	...	1.7	1.8	1.5
Bushel weight in lbs.....	59.6	61.3	60.2	34.1	32.2	33.2	44.8	45.3	49.6
Commercial grades in percentage.....	30	67	30	4	...	...	3	...	...
1°.....	30	27	37	41	18	23	6	...	61
2°.....	17	6	20	18	14	23	19	43	...
3°.....	17	...	10	4	...	...	...	...	...
4°.....	6	...	3	...	9	9	16	9	23
5°.....	...	...	...	2 Fd.	50	36	39	35	7
...	...	...	...	3 Fd.	9	9	17	13	...

Wheat—Necessary grain yield difference 1.4 bushels.

Oats—No significant grain yield difference between varieties.

Barley—Necessary grain yield difference 2.3 bushels.

TABLE No. 23.—SUMMARIZED RESULTS FOR ZONE 4A

	WHEAT			OATS			BARLEY		
	Thatcher	Apex	Regent	Valor	Vanguard	Victory	O.A.C. 21	Neval	Rex
Average yield grain plus straw in lbs. per acre.....	3,328	3,677	3,332	3,060	3,237	3,691	3,605	4,145	4,163
Average grain yield in bus. per acre (gross).....	26.3	25.0	23.3	34.3	40.0	45.3	29.3	36.7	34.3
Average grain yield in bus. per acre (minus hulls).....	26.3	25.0	23.3	25.7	28.0	31.7	25.8	32.3	30.2
Average straw yield in lbs. per acre (minus hulls).....	1,580	1,500	1,400	875	952	1,078	1,239	1,548	1,450
Average grain yield in lbs. per acre.....	1,751	2,165	1,926	1,897	1,879	1,911	2,206	2,403	2,503
Days from seeding to ripening.....	87.5	87.0	86.0	81.0	88.0	88.0	84.0	85.0	85.5
Height of plants in inches.....	24.4	24.8	22.0	20.2	20.8	24.2	21.4	21.4	22.6
Straw strength.....	9.8	9.7	9.7	9.7	9.7	9.3	9.7	9.7	9.8
Neck strength.....	...	...	...	...	...	...	1.8	1.9	1.6
Bushel weight in lbs.....	63.5	64.1	63.6	37.8	36.0	36.8	48.9	48.9	51.7
Commercial grades in percentage.....	50	25	50	...	34	34	25	...	50
1°.....	50	50	25	100	33	33	25	...	50
2°.....	50	25	25	...	33	33	50	100	...
3°.....	...	...	25	...	33	33	...	...	...
...	...	...	...	...	...	33	...	...	...

Wheat—No significant grain yield difference between varieties.

Oats—Necessary grain yield difference 9.3 bushels.

Barley—Necessary grain yield difference 3.9 bushels.

TABLE No. 24.—SUMMARIZED RESULTS FOR ZONE 4B

	WHEAT			OATS			BARLEY		
	Thatcher	Apex	Regent	Valor	Vanguard	Victory	O.A.C. 21	Newal	Rex
Average yield grain plus straw in lbs. per acre.....	3,525	3,587	3,751	2,831	3,378	3,468	3,432	3,996	3,552
Average grain yield in bus. per acre (gross).....	22.4	21.8	22.8	36.4	37.2	42.2	25.0	37.2	25.6
Average grain yield in bus. per acre (minus hulls).....	22.4	21.8	22.8	27.3	26.0	29.5	22.0	32.7	22.5
Average straw yield in lbs. per acre (minus hulls).....	1,344	1,308	1,368	928	885	1,004	1,056	1,570	1,080
Average straw yield in bus. per acre.....	2,167	2,280	2,378	1,612	2,114	2,035	2,214	2,212	2,321
Days from seeding to ripening.....	93.0	93.0	92.0	79.0	87.5	89.0	83.5	82.5	89.5
Height of plants in inches.....	27.9	29.1	30.1	25.3	27.5	28.8	30.0	28.6	26.1
Straw strength.....	7.4	7.1	6.7	7.2	7.3	6.5	7.1	7.9	7.4
Neck strength of barley.....	59.9	61.6	60.3	37.2	32.7	35.3	2.0	2.0	1.6
Bushel weight in lbs.....	14	29	42	14	14	43	45.5	45.4	50.4
Commercial grades in percentage.....	1 Hd.	1 Hd.	42	57	29	14	25	50	63
	1°	42	43	29	29	14	25	50	25
	2°	14	15	....	....	14	....	38	....
	3°	14	....	....	28	29	50	12	....
	4°	29	....	....	....	....	....	....	....

Wheat—No significant grain yield difference between varieties.

Oats—No significant grain yield difference between varieties.

Barley—Necessary grain yield difference 7.6 bushels.

## Cereal Variety Zone 1A

(See Table 12, Page 29)

**YIELD GRAIN PLUS STRAW IN POUNDS PER ACRE. Wheat.**—Although Thatcher was high it exceeded Apex by only 16 pounds and Regent by 42 pounds. **Oats.**—Vanguard outyielded Victory by 82 pounds. The yield of Valor was nearly 250 pounds less than Victory and 329 pounds less than Vanguard. **Barley.**—Rex exceeded Newal by 91 pounds. O.A.C. 21 was decidedly low, the difference between this variety and Newal and Rex being 336 pounds and 427 pounds respectively. **YIELD GRAIN IN BUSHELS PER ACRE. Wheat.**—Thatcher was the highest yielder, outyielding Regent by 1.7 bushels and Apex by 2.4 bushels, both differences being significant. The difference between Regent and Apex failed to equal the necessary difference for the zone. **Oats.**—Vanguard exceeded Valor and Victory by .9 bushel and 2.4 bushels respectively but neither difference was significant. **Barley.**—Newal outyielded Rex by 1.5 bushels, a difference which was not significant. Both of these varieties, however, were significantly higher yielders than O.A.C. 21, Rex exceeding the latter variety by 3.1 bushels and Newal outyielding it by 4.7 bushels. **YIELD STRAW IN POUNDS PER ACRE. Wheat.**—Apex outyielded Regent and Thatcher by approximately 60 pounds and 125 pounds respectively. **Oats.**—Vanguard and Victory were equal exceeding Valor by nearly 300 pounds. **Barley.**—Rex excelled, outyielding Newal by approximately 150 pounds and O.A.C. 21 by 235 pounds. **EARLINESS. Wheat.**—Thatcher excelled but it was only .5 day earlier than Regent. Apex was nearly 1 day later than Thatcher and .4 day later than Regent. **Oats.**—Valor ripened earlier than Vanguard and Victory by differences of 4.7 days and 11.5 days respectively. **Barley.**—O.A.C. 21 excelled. It exceeded Newal by .5 day and Rex by 1.5 days. **HEIGHT. Wheat.**—Apex exceeded both Thatcher and Regent by a difference of .8 inch. **Oats.**—Victory excelled, being taller than Vanguard and Valor by 2.2 inches and 3.6 inches respectively. **Barley.**—O.A.C. 21 and Newal tied. These varieties were nearly 1 inch taller than Rex. **STRAW STRENGTH. Wheat.**—Thatcher excelled, being slightly superior to Regent and somewhat superior to Apex. **Oats.**—Vanguard placed first but was closely followed by Victory and Valor in the order named. **Barley.**—Rex was slightly superior to Newal and both varieties showed superiority to O.A.C. 21. **NECK STRENGTH OF BARLEY.** Rex was the strongest necked variety being somewhat superior to Newal and superior to O.A.C. 21. **BUSHEL WEIGHT. Wheat.**—Apex excelled, outweighing Thatcher by 1 pound and Regent by 1.2 pounds. **Oats.**—Victory exceeded Valor by nearly 1 pound and outweighed Vanguard by 1.8 pounds. **Barley.**—Rex weighed 3.8 pounds more than Newal and 4.5 pounds more than O.A.C. 21. **GRADES. Wheat.**—Bleached, green, shrunken, pink or immature kernels were in evidence in nearly all samples. Of the three varieties Apex appeared to show the least percentage of defects and this fact coupled with good weight resulted in Apex showing some superiority in commercial grades. Little difference appeared in the commercial grades of Thatcher or Regent. **Oats.**—Green and light-weight kernels appeared in nearly all samples. Valor showed somewhat less defects than the other varieties and excelled in both weight and grades. Victory graded somewhat better than Vanguard. **Barley.**—Light-weight and weathered kernels were in evidence in nearly all samples. Peeled kernels also appeared in a number of samples of O.A.C. 21 and this variety showed more defects than Newal or Rex. Rex excelled in weight and in commercial grades. Taking the tests as a whole, Newal graded somewhat better than O.A.C. 21. **STEM RUST. Wheat.**—Only a small percentage of infection was reported but Thatcher appeared to show somewhat more than Apex or Regent. **Oats.**—There was little difference in the percentage of infection reported on any of the varieties. **Barley.**—The light infection was almost equal on all varieties. **CROWN OR LEAF RUST. Wheat.**—Thatcher showed somewhat more leaf rust infection than Apex or Regent. **Oats.**—The percentage of crown rust reported in Valor was slightly more than the other varieties. **Barley.**—O.A.C. 21 and Rex were equal in the percentage shown, the infection being somewhat more than that appearing on Newal. **COVERED SMUT. Wheat.**—No infection was

reported. **Barley.**—Newal was only slightly more infected than O.A.C. 21. Rex was almost free. **LOOSE SMUT. Wheat.**—The light infection reported was almost equal in all varieties. **Barley.**—Newal was heavily infected. O.A.C. 21 also showed a considerable number of infected heads. Rex showed traces of infection in a number of tests but much less than O.A.C. 21 or Newal. **OAT SMUT.** Vanguard showed slightly more infection than Valor but somewhat less than Victory. **SHATTERING. Wheat.**—The small loss suffered by Regent was slightly more than the loss to Apex, and Apex sustained slightly more loss than Thatcher. **Oats.**—The loss to Valor was somewhat more than the loss suffered by the other varieties. **Barley.**—O.A.C. 21 sustained slightly more loss than Newal and the latter variety suffered slightly more than Rex.

**GENERAL RESULTS. Wheat.**—Thatcher yielded significantly more than either Regent or Apex. It was reasonably satisfactory in other characteristics and the results suggest that at least it is one of the best varieties for use in this zone. This is confirmed by the results of tests conducted in 1939 and 1940 when Thatcher also significantly outyielded the other varieties. No significant difference appeared between the grain yields of Regent or Apex but the latter variety excelled Regent in bushel weight and was superior in commercial grades. In so far as this test is concerned there appears to be little to choose between the general performance of these two varieties and an average of the results during the three-year period 1939 to 1941 show that they have tied in grain yield. In its report for 1942, the Saskatchewan Cereal Variety Committee has not included Regent in its recommendations by zones. Thatcher and Apex are the varieties listed for use in Zone 1A. **Oats.**—Vanguard excelled in grain yield followed in sequence by Valor and Victory. None of the differences between the oat varieties, however, were statistically significant. Victory excelled in bushel weight and was somewhat superior to Vanguard in commercial grades. Victory, however, was more than seven days later than Vanguard. Officially Victory is recommended and in this test it appeared reasonably satisfactory. In general, however, the difference between this variety and Vanguard was not of a marked nature. Valor was nearly five days earlier than Vanguard. It showed relatively good weight and commercial grades. In its recommendations for 1942 the Saskatchewan Cereal Variety Committee lists Valor as a variety requiring further test but in this zone, which has frequently suffered from drought conditions and grasshopper infestations, the results suggest that it is worthy of consideration when the choice of a variety is being made. **Barley.**—Newal was the highest yielder but the difference between this variety and Rex was not significant. O.A.C. 21 was significantly lower in yield than either Newal or Rex. Rex excelled in straw and neck strengths and exceeded the other varieties in weight and commercial grades. Rex is officially recommended and in this test it appeared to be somewhat superior to Newal in most characteristics. O.A.C. 21 was not outstanding in any characteristic.

Considering total yield of grain plus straw, oats were only slightly above wheat but barley decidedly excelled both oats and wheat. In grain yield there were significant differences between crops. There were also significant differences between tests and the results showed that while barley yielded well in nearly all tests, in 54% of the tests wheat exceeded oats and in 46% oats exceeded wheat.

In grain yield without hulls, barley was only approximately 10% above wheat but was 54% above oats. Wheat also exceeded oats by 40%. According to the results in this zone barley proved more valuable than wheat for feed on the farm particularly if the barley straw could be ranked higher in value than wheat straw as in the case of a smooth-awned variety. Wheat, however, excelled oats in kernel yield and while the greater usefulness of oat straw would offset this advantage to some extent it must be considered that oats, being unsuitable for hog feeding, would only be used where the straw was needed. Therefore, it would appear that barley and wheat made the best showing for feed on a farm with both cattle and hogs.

## Cereal Variety Zone 1B

(See Table 13, Page 29)

### YIELD GRAIN PLUS STRAW IN POUNDS PER ACRE. Wheat.—

Regent excelled in this zone exceeding Apex by 114 pounds and Thatcher by 467 pounds. **Oats.**—Victory outyielded Vanguard by 236 pounds and Valor by 568 pounds. **Barley.**—Rex was only slightly higher in gross yield than Newal, the difference between these varieties being only approximately 50 pounds but O.A.C. 21 was outyielded by Newal and Rex by 681 pounds and 730 pounds respectively. **YIELD GRAIN IN BUSHELS PER ACRE.**

**Wheat.**—Regent exceeded Apex by 2 bushels and Thatcher by 3.2 bushels but none of the differences between the wheat varieties were statistically significant. **Oats.**—Victory excelled outyielding Vanguard by 5.4 bushels and Valor by 7.4 bushels but here again, owing to unusual yield fluctuations within the tests, no significance is indicated. **Barley.**—Newal outyielded Rex by 2.7 bushels but this difference failed to equal the necessary difference for the zone. O.A.C. 21, however, was outyielded by Rex and Newal by 7.2 bushels and 9.9 bushels respectively, both differences being significant. **YIELD STRAW IN POUNDS PER ACRE. Wheat.**—Apex and Regent were almost equal, outyielding Thatcher by nearly 300 pounds. **Oats.**—Victory excelled, exceeding Vanguard and Valor by 55 pounds and 322 pounds respectively. **Barley.**—Rex outyielded Newal by 185 pounds and O.A.C. 21 by 386 pounds. **"EARLINESS." Wheat.**—Regent was the earliest maturing variety, exceeding Thatcher and Apex by differences of .6 day and .8 day respectively. **Oats.**—Valor ripened 2.8 days earlier than Vanguard and 4.2 days earlier than Victory. **Barley.**—Newal excelled, exceeding O.A.C. 21 by .2 day and Rex by 1 day. **HEIGHT. Wheat.**—Apex exceeded both Thatcher and Regent by approximately 3 inches. **Oats.**—Victory excelled, being nearly 3 inches taller than Vanguard and nearly 5 inches taller than Valor. **Barley.**—Newal and Rex tied, exceeding O.A.C. 21 by .4 inch. **STRAW STRENGTH.**

**Wheat.**—Apex excelled, being superior to Regent and decidedly superior to Thatcher. **Oats.**—Victory showed slightly more strength than Vanguard and both of these varieties were superior to Valor although the differences were not of a marked nature. **Barley.**—Rex was superior to both O.A.C. 21 and Newal. The two latter varieties tied in this characteristic. **NECK STRENGTH OF BARLEY.** Rex was superior to O.A.C. 21 and Newal, which were equal. **BUSHEL WEIGHT. Wheat.**—Apex excelled, outweighing Regent and Thatcher by 1 pound and 1.1 pounds respectively. **Oats.**—Victory exceeded Valor by only .6 pound but outweighed Vanguard by nearly 2 pounds. **Barley.**—Rex distinctly outweighed the other varieties, exceeding Newal by 4.3 pounds and O.A.C. 21 by 4.8 pounds. **GRADES. Wheat.**—Some bleached, immature and green kernels were in evidence in all varieties but Apex appeared to show less defects than the other varieties. Combined with good weight this resulted in Apex excelling in commercial grades. There was little difference between the grades of Thatcher or Regent although of the two latter varieties, Regent, was slightly superior. **Oats.**—Light weight and some green kernels appeared in all varieties and grades were somewhat low. Because of slight superiority in weight, Victory showed the best commercial grades but only slightly higher than Valor or Vanguard. **Barley.**—The samples of all varieties showed some light weight kernels but Rex excelled in weight and because of this it was decidedly superior to O.A.C. 21 and Newal in commercial grades. O.A.C. 21 graded somewhat better than Newal. **STEM, LEAF OR CROWN RUST.** No infection was reported. **COVERED SMUT.** No infection was reported. **LOOSE SMUT.**

**Wheat.**—Apex showed traces of infection in one test and Regent in two tests. **Barley.**—Only slight traces were noticeable in the Rex variety in one test. O.A.C. 21 showed a light infection. Loose smut was most in evidence in the Newal variety, traces to a moderate amount of infection being reported in many tests. **OAT SMUT.** Valor and Victory were free but traces of infection appeared in Vanguard. **SHATTERING.** Only a small loss from shattering was reported. **Wheat.**—Regent appeared to suffer slightly less than Thatcher or Apex. **Oats.**—Victory showed a slightly higher loss than

Vanguard. Valor was almost free. **Barley.**—Rex showed only slightly more loss than O.A.C. 21 or Newal.

**GENERAL RESULTS. Wheat.**—In this zone Regent led in grain yield. It was followed by Apex and Thatcher in the order named, but there were no significant yield differences between any of the wheat varieties. In the 1941 test Regent made a creditable showing. It was the earliest maturing variety, showed relatively strong straw and was reasonably satisfactory in bushel weight and commercial grades. As one year's test is not conclusive it might be mentioned that in 1939 Thatcher yielded significantly more than Regent but the latter variety outyielded Apex by a significant difference. In the 1940 test both Thatcher and Apex significantly outyielded Regent. (In considering these results, however, it must be pointed out that in the 1939-40 tests, Zone 1B included the western part of the area which is now Zone 1A. The area which now constitutes 1B extends eastward from the Alberta border to Gull Lake in the south and to Superb in the north, and is considered to be outside the region subject to stem rust losses.) In the 1941 test Apex was also reasonably satisfactory. It was less than one day later than Regent, excelled in height, straw strength, bushel weight and commercial grades. Apex is one of the varieties officially recommended for use in this zone. Thatcher is also officially recommended but in this test it was somewhat inferior to both Regent and Apex. **Oats.**—Victory was the highest yielder. It was followed in sequence by Vanguard and Valor but here again none of the differences were statistically significant. Apart from its maturity period Victory appeared to be generally superior to the other varieties and this variety is listed in the official recommendations of the Cereal Variety Committee. With the exception of the advantage of Valor in "earliness," there appeared to be little difference in the comparative performance of Valor and Vanguard. **Barley.**—Newal excelled in grain yield but the difference between this variety and Rex failed to equal the necessary difference for the zone. O.A.C. 21, however, was significantly outyielded by both Newal and Rex. Although it was one day later than Newal, generally Rex appeared to be the better of the two varieties. It excelled in straw and neck strengths and was decidedly superior in bushel weight and commercial grades. Rex is one of the varieties recommended by the government officials for use in this zone.

In total yield of grain plus straw, barley was above oats and oats above wheat but in grain yield there were no significant differences between crops. There were highly significant differences between tests and the results showed that while barley decidedly excelled both wheat and oats in 50% of the tests, in 30% wheat excelled, while in 20% of the tests oats yielded higher than the other crops. A study of grain yield minus hulls showed that barley excelled wheat somewhat and both decidedly excelled oats. These results indicate that barley appeared most useful as a general feed crop. If the straw was needed, its usefulness would, of course, be enhanced if a smooth-awned variety was used. The kernel yield of barley was 42% over oats and nearly 10% over wheat. In kernel yield wheat was 30% over oats and unless the oat straw was needed, wheat appeared to be more valuable than oats, particularly for feed on a farm with both cattle and hogs.

## Cereal Variety Zone 2A

(See Table 14, Page 30)

### YIELD GRAIN PLUS STRAW IN POUNDS PER ACRE. Wheat.—

Little difference appeared between any of the varieties, Apex being slightly above Thatcher and Thatcher slightly above Regent. **Oats.**—Victory and Vanguard were almost equal, exceeding Valor by approximately 630 pounds.

**Barley.**—Rex was high, outyielding Newal and O.A.C. 21 by 41 pounds and 285 pounds respectively. **YIELD GRAIN IN BUSHELS PER ACRE. Wheat.**—

Thatcher exceeded Regent by 1 bushel and outyielded Apex by 1.3 bushels but none of the differences between wheat varieties were statistically significant. **Oats.**—Vanguard was the highest yielder, exceeding Victory and

Valor by 1.8 bushels and 4.1 bushels respectively. Here again, however, the differences were not statistically significant. **Barley.**—With an average yield of 38.6 bushels, Newal exceeded Rex and O.A.C. 21 by significant differences but Rex, although outyielding O.A.C. 21, failed to do so by a difference which equalled the necessary difference for the zone. **YIELD STRAW IN POUNDS PER ACRE. Wheat.**—Apex exceeded Regent by only 59 pounds but outyielded Thatcher by nearly 100 pounds. **Oats.**—Victory yielded 87 pounds more than Vanguard. Valor was exceeded by Vanguard and Victory by 464 pounds and 551 pounds respectively. **Barley.**—Rex exceeded O.A.C. 21 by 251 pounds and Newal by 275 pounds. **"EARLINESS." Wheat.**—Regent led in its maturity period, ripening .9 day earlier than Thatcher and 1.3 days earlier than Apex. **Oats.**—Valor was 8.7 days earlier than Vanguard and 12.4 days earlier than Victory. **Barley.**—O.A.C. 21 excelled, being .7 day earlier than Rex and 1.7 days earlier than Newal. **HEIGHT. Wheat.**—Apex and Regent were practically equal and these varieties exceeded Thatcher by almost 1 inch. **Oats.**—Victory was decidedly taller than Vanguard or Valor, exceeding these varieties by 2.4 inches and 3.9 inches respectively. **Barley.**—O.A.C. 21 excelled, being .9 inch taller than Newal and 1.1 inches taller than Rex. **STRAW STRENGTH. Wheat.**—Thatcher excelled, followed in sequence by Apex and Regent. The differences between any of the varieties, however, were not of a marked nature. **Oats.**—Victory ranked first but was only slightly superior to Valor and Vanguard which tied. **Barley.**—Rex showed slight superiority to O.A.C. 21 and Newal which also tied. **NECK STRENGTH OF BARLEY. O.A.C. 21** appeared to show slight superiority in this zone. It was followed closely, however, by Rex and Newal in the order named. **BUSHEL WEIGHT. Wheat.**—Apex again excelled, outweighing Regent and Thatcher by approximately 1 pound. **Oats.**—Valor excelled in this zone. It exceeded Victory by only .3 pound but weighed 1.6 pounds more than Vanguard. **Barley.**—Rex outweighed both O.A.C. 21 and Newal by differences of 3.5 pounds. **GRADES. Some bleached, pink, shrunk-**en, green or immature kernels appeared in nearly all the samples of Thatcher and Regent. Some defects of this nature also appeared in the Apex samples but this variety showed decidedly less defects than the others. This fact, together with superior bushel weight resulted in Apex being high in commercial grades. There was little difference between the grades of Thatcher or Regent. **Oats.**—Light weight kernels were chiefly responsible for lowering the grades of the oat varieties. Valor showed better weight than the other varieties but in a few samples weathered kernels caused a lowering of the commercial grades and in this test there was little difference between the grades of any of the varieties. **Barley.**—Light weight and weathered kernels appeared in the barley varieties. Rex, however, contained a smaller number of light kernels than O.A.C. 21 or Newal and it excelled in commercial grades. O.A.C. 21 was only slightly superior to Newal. **STEM RUST. Wheat.**—Slight infection was reported but little difference appeared between varieties. **Oats.**—The slight infection reported was almost equal in all varieties. **Barley.**—There were only a few infected stems but O.A.C. 21 showed most infection, followed by Newal and Rex in the order named. **CROWN OR LEAF RUST. Wheat.**—Thatcher showed nearly twice the percentage of infection that appeared in Apex or Regent. **Oats.**—Victory showed approximately twice the infection appearing in Vanguard. Valor was almost free. **Barley.**—Rex showed some infection, the percentage being almost twice the percentage appearing in O.A.C. 21. Newal was almost free. **COVERED SMUT. Wheat.**—No infection was reported. **Barley.**—O.A.C. 21 was free but a small and almost equal degree of infection was reported in Newal and Rex. **LOOSE SMUT. Wheat.**—All varieties were free. **Barley.**—Newal was again heavily infected, showing nearly twice the infection appearing in O.A.C. 21. Rex was almost free. **OAT SMUT. Vanguard** showed traces of infection. Victory was almost free. Valor was free. **SHATTERING. Wheat.**—The loss sustained by all varieties was almost equal. **Oats.**—Valor showed decidedly more loss than Victory or Vanguard. (In a few tests it was obvious that the Valor variety stood a few days after ripening. Some loss by shattering may be attributed to this fact.) **Barley.**—The small loss reported was approximately equal in all varieties.

**GENERAL RESULTS. Wheat.**—Thatcher led in grain yield. It was followed by Regent and Apex in the order named. None of the differences between the wheat varieties were statistically significant. In previous tests, Thatcher has proved its usefulness for use in this zone and in 1941, although it was slightly inferior in weight, it appeared to be reasonably satisfactory. Of the other two varieties, Apex has also proved satisfactory in previous tests and in 1941 it was superior in most characteristics. Therefore, Thatcher and Apex made the best showing and these are the varieties officially recommended. **Oats.**—Vanguard excelled in grain yield but here again none of the grain yield differences were statistically significant. In this test, apart from "earliness," there was little to choose between any of the varieties. Valor, however, was nearly 9 days earlier than Vanguard and over 12 days earlier than Victory. It excelled in bushel weight but was more or less equal to the other varieties in commercial grades. Vanguard was nearly 3 days earlier than Victory but the latter variety excelled in bushel weight. Vanguard and Victory are officially recommended but the earliness of Valor would be a distinct advantage in this zone which has in the past suffered severely from drought and grasshoppers. **Barley.**—Newal excelled in grain yield, exceeding both Rex and O.A.C. 21 by significant differences. Rex outyielded O.A.C. 21 but failed to do so by a difference which equalled the necessary difference for the zone. The Rex variety, however, excelled in bushel weight and commercial grades and in this test Newal and Rex have made the best showing. Of the three varieties used in the test, Rex is officially recommended.

In gross yield grain plus straw, barley was decidedly above oats and oats was above wheat. In grain yield there were highly significant differences between crops. There were also significant differences between tests and the results showed that while barley yielded well in all tests, in 56% oats excelled wheat and in 44% of the tests wheat excelled oats.

When the grain minus hulls is considered, the results showed that barley greatly excelled both wheat and oats, while wheat exceeded oats by 26%. In this zone the results indicate that barley was decidedly the best feed crop. This would be further emphasized if the straw was needed and a smooth-awned variety was used. Barley was 61% higher in kernel yield than oats and as already mentioned, wheat was 26% higher than oats, and despite the greater usefulness of oat straw, it would appear that wheat was a superior crop to oats, at least on a farm where both cattle and hogs were to be fed.

## Cereal Variety Zone 2B

(See Table 15, Page 30)

**YIELD GRAIN PLUS STRAW IN POUNDS PER ACRE. Wheat.**—Thatcher outyielded Regent and Apex by 220 pounds and 346 pounds respectively. **Oats.**—Victory yielded only 74 pounds more than Vanguard but Vanguard and Victory exceeded Valor by 246 and 320 pounds respectively. **Barley.**—Newal excelled, exceeding Rex by 227 pounds. Rex and Newal outyielded O.A.C. 21 by differences of 227 pounds and 546 pounds respectively. **YIELD GRAIN IN BUSHELS PER ACRE. Wheat.**—Thatcher led in yielding ability, significantly outyielding both Regent and Apex. Regent was only slightly higher in yield than Apex; the difference between these varieties was not significant. **Oats.**—Victory excelled but it failed to outyield Vanguard by a difference which exceeded the necessary difference for the zone. Both Victory and Vanguard exceeded Valor by differences which were significant. **Barley.**—Newal yielded significantly more than Rex or O.A.C. 21 while Rex exceeded O.A.C. 21 by 4.2 bushels, a difference which was also significant. **YIELD STRAW IN POUNDS PER ACRE. Wheat.**—Thatcher exceeded Regent and Apex by differences of 67 pounds and 147 pounds respectively. **Oats.**—Victory outyielded Vanguard by only approximately 50 pounds. Valor yielded 193 pounds less than Victory and 141 pounds less than Vanguard. **Barley.**—Newal was the highest yielder, exceeding Rex by 107 pounds and O.A.C. 21 by 225 pounds. **"EARLINESS." Wheat.**—

Little difference appeared in the maturity periods of any of the varieties. Regent exceeded Apex and Thatcher by only .4 day and .5 day respectively. **Oats.**—Valor was 4.6 days earlier than Vanguard and 7.4 days earlier than Victory. **Barley.**—No great variations appeared in the maturity dates of the barley varieties, O.A.C. 21 being .2 day earlier than Newal and .6 day earlier than Rex. **HEIGHT. Wheat.**—Thatcher and Apex were almost equal and Regent was only slightly shorter than these varieties. **Oats.**—Victory again excelled, exceeding Vanguard and Valor by 2.2 inches and 3.5 inches respectively. **Barley.**—Newal was .5 inch taller than Rex and 1 inch taller than O.A.C. 21. **STRAW STRENGTH. Wheat.**—Thatcher excelled but was followed closely by Apex and Regent in the order named. **Oats.**—Vanguard was only slightly superior to Valor and Victory which tied. **Barley.**—Rex ranked first, followed in sequence by Newal and O.A.C. 21 but here again the differences were not of a marked nature. **NECK STRENGTH OF BARLEY.** Rex was somewhat superior to Newal and decidedly superior to O.A.C. 21. **BUSHEL WEIGHT. Wheat.**—Apex and Thatcher were practically equal but these varieties exceeded Regent by approximately 1 pound. **Oats.**—Victory exceeded Valor and Vanguard by 1 pound, the two latter varieties having tied. **Barley.**—Rex excelled, exceeding Newal and O.A.C. 21 by 3.6 pounds and 4.2 pounds respectively. **GRADES. Wheat.**—Shrunken, bleached, green or pink kernels appeared in nearly all the samples of Thatcher and Regent. These defects also appeared to a lesser extent in the Apex variety and although Apex was superior in grades, the difference between this variety and Thatcher was only of a slight nature. Regent was low. **Oats.**—Light weight and green kernels were in evidence in nearly all samples. Little difference was shown in the grades of Valor and Victory. Vanguard graded somewhat lower than these varieties. **Barley.**—Many samples contained light weight or weathered kernels. Rex appeared to be somewhat less affected than the other varieties. It excelled in weight and commercial grades. As could be expected, O.A.C. 21 was superior to Newal but the difference between these varieties was only slight. **STEM RUST. Wheat.**—A small amount of infection appeared on all varieties but there was no great difference in the percentages shown. **Oats.**—The percentage of infection on Victory was slightly higher than on the other varieties. **Barley.**—Most infection appeared on the barley varieties. Newal showed somewhat less infection than the others. **CROWN OR LEAF RUST. Wheat.**—Apex appeared to be somewhat less infected than the other varieties. **Oats.**—Victory showed approximately twice as much crown rust infection as Vanguard. Valor was almost free. **Barley.**—Rex showed slightly more infection than O.A.C. 21 or Newal. **COVERED SMUT. Wheat.**—No infection was reported. **Barley.**—Very little covered smut was reported although of the three varieties, Newal appeared to show most infection. **LOOSE SMUT. Wheat.**—All varieties were free. **Barley.**—The percentage of infection appearing in Newal was decidedly more than in O.A.C. 21 while Rex showed only 50% of the infected heads appearing in O.A.C. 21. **OAT SMUT.** Vanguard showed somewhat more infection than Valor or Victory. **SHATTERING. Wheat.**—There was little difference in the loss sustained by any of the varieties. **Oats.**—Valor showed slightly more loss than Victory while the loss to Vanguard was less than either of the other varieties. **Barley.**—O.A.C. 21 sustained the greatest loss. The loss to Newal was about half that suffered by O.A.C. 21 and somewhat more than Rex.

**GENERAL RESULTS. Wheat.**—In grain yield, Thatcher outyielded both Regent and Apex by differences which were significant. It was reasonably satisfactory in other characteristics and generally made the best showing. The grain yield difference between Apex and Regent was not significant but Apex excelled in bushel weight and commercial grades, and of the two varieties Apex appeared to most advantage. Thus the results of this test suggest that Thatcher and Apex are the most suitable varieties and these are officially recommended. **Oats.**—Victory was the highest yielder but it was not significantly higher than Vanguard. Valor was outyielded by both Victory and Vanguard by differences which were significant. Vanguard ripened nearly three days earlier than Victory but in this test the general performance of Victory appeared to be slightly superior to Van-

guard. Vanguard and Victory are officially recommended. **Barley.**—Newal yielded significantly more than Rex or O.A.C. 21. Rex exceeded O.A.C. 21 by a difference which was also significant. The bushel weight and relatively good grades of Rex in a number of tests gives it a distinct advantage over Newal as a cash crop. As feed on the farm, however, Newal was somewhat superior to Rex. Both of these varieties are officially recommended for use in this zone.

In gross yield of grain plus straw, barley was above wheat and wheat was above oats. In grain yield, however, there were no significant differences between crops. There were significant differences between the tests and the results showed that while barley excelled in a number of tests, in others it was exceeded by both wheat and oats. In many of the tests there were also marked differences in the comparative yields of wheat and oats. A study of grain minus hulls showed that barley and wheat were almost equal and both excelled oats by approximately 45%. The results of this test suggest that both barley and wheat were considerably more valuable than oats for feed on the farm where both hogs and cattle are being fed, with barley having an advantage over wheat if the straw was needed and a smooth-awned variety was used.

## Cereal Variety Zone 2C

(See Table 16, Page 31)

**YIELD GRAIN PLUS STRAW IN POUNDS PER ACRE. Wheat.**—Thatcher and Apex were almost equal, exceeding Regent by over 650 pounds. **Oats.**—Vanguard excelled, outyielding Valor and Victory by 273 pounds and 341 pounds respectively. **Barley.**—Newal exceeded Rex by only 20 pounds but outyielded O.A.C. 21 by 585 pounds. **YIELD GRAIN IN BUSHELS PER ACRE. Wheat.**—Thatcher outyielded Apex by only .5 bushel, a difference which was not significant. Regent was decidedly low and was significantly outyielded by both of the other varieties. **Oats.**—Vanguard exceeded Valor by 5 bushels and Victory by 5.5 bushels but none of the differences between the oat varieties were significant. **Barley.**—Newal and Rex tied, and both of these varieties yielded significantly more than O.A.C. 21. **YIELD STRAW IN POUNDS PER ACRE. Wheat.**—Apex excelled, but it exceeded Thatcher by only 50 pounds. Regent, however, was outyielded by Thatcher and Apex by differences of 326 pounds and 376 pounds respectively. **Oats.**—Vanguard exceeded Valor by 113 pounds and Victory by 158 pounds. **Barley.**—Newal outyielded Rex by only 15 pounds, but exceeded O.A.C. 21 by 245 pounds. **"EARLINESS."** **Wheat.**—Regent excelled, ripening .7 day earlier than Thatcher and 1.7 days earlier than Apex. **Oats.**—Valor exceeded Vanguard by 6.6 days and Victory by 13 days. **Barley.**—Newal was the earliest variety, ripening 3 days earlier than Rex and 5.3 days earlier than O.A.C. 21. **HEIGHT. Wheat.**—Apex exceeded Thatcher by .6 inch and Regent by 3.3 inches. **Oats.**—Victory was 3 inches taller than Vanguard and 5 inches taller than Valor. **Barley.**—Newal exceeded O.A.C. 21 by only .4 inch but was 1 inch taller than Rex. **STRAW STRENGTH. Wheat.**—Thatcher ranked first, followed in sequence by Apex and Regent but the differences were not of a marked nature. **Oats.**—Victory excelled but was followed closely by Valor and Vanguard in the order named. **Barley.**—Rex was somewhat superior to O.A.C. 21 while the latter variety showed very slight superiority to Newal. **NECK STRENGTH OF BARLEY.** O.A.C. 21 and Newal tied, showing some superiority to Rex. **BUSHEL WEIGHT. Wheat.**—Apex excelled, outweighing Thatcher by .5 pound and Regent by 1.5 pounds. **Oats.**—Victory exceeded Valor by only .2 pound but weighed 1 pound more than Vanguard. **Barley.**—Rex outweighed O.A.C. 21 by 4.1 pounds and Newal by 3.5 pounds. **GRADES. Wheat.**—Bleached, shrunken, green and immature kernels appeared in Thatcher and Regent but Apex was relatively free. This, together with superior weight, resulted in Apex excelling in commercial grades. Thatcher weighed and graded better than Regent. **Oats.**—Immature and light weight kernels were in evidence in all varieties but Victory showed a smaller amount of defects than the other varieties

and excelled in grades. Vanguard graded somewhat better than Valor. **Barley.**—A few green and weathered kernels appeared in the barley varieties. Rex graded well. Newal graded 100% 3 CW, the highest statutory grade in which this smooth-awned variety can be placed. The grade of O.A.C. 21 ranged from good to poor. **STEM RUST.** No infection was reported. **CROWN OR LEAF RUST.** All varieties were free of infection. **COVERED SMUT. Wheat.**—No infection was reported. **Barley.**—Newal appeared to be slightly more infected than O.A.C. 21 while the infection of Rex was less than the other varieties. **LOOSE SMUT. Wheat.**—All varieties were free. **Barley.**—Newal showed slightly more affected heads than O.A.C. 21. Rex was free. **OAT SMUT.** Very light infection was reported in the Valor variety only. **SHATTERING. Wheat.**—Thatcher showed a somewhat higher loss than Regent, while the latter variety sustained more loss than Apex. **Oats.**—The loss reported to Valor was decidedly more than to the other varieties but this in part was undoubtedly due to the Valor being left until over-ripe. Vanguard showed slightly more loss than Victory. **Barley.**—O.A.C. 21 suffered somewhat more loss than Newal and decidedly more than Rex.

**GENERAL RESULTS. Wheat.**—There was little difference in the grain yield of Thatcher and Apex and both of these varieties outyielded Regent by significant differences. Thatcher was 1 day earlier than Apex and slightly superior in straw strength, but Apex excelled in height, bushel weight and commercial grades. In the tests conducted during the two-year period 1939 to 1940, both Thatcher and Apex proved satisfactory. In this test their performance is decidedly better than Regent and they are officially recommended for use in this zone in 1942. **Oats.**—In grain yield, Vanguard excelled, but none of the differences between oat varieties were statistically significant. Victory is officially recommended but in this test Vanguard, although inferior in some characteristics, appears to have made the best showing. **Barley.**—Newal and Rex tied in grain yield and both of these varieties outyielded O.A.C. 21 by significant differences. Both Newal and Rex have characteristics superior to each other, but of the two, Rex appears to have made the best showing and it is recommended for use in this zone by the Saskatchewan Cereal Variety Committee.

A comparison of yield, grain plus straw, shows that wheat was above barley and barley was slightly above oats, but in grain yield there were no significant differences between crops. There were also no significant differences between tests. When the grain without hulls is considered, wheat was above barley and both of these crops greatly excelled oats. The results indicate that wheat and barley are most valuable for feed on the farm, providing the barley straw could be ranked higher in value than the wheat straw, as would be the case with a smooth-awned variety. In kernel yield, wheat was 61% over oats and barley excelled oats by 35%, and the greater usefulness of the oat straw would certainly not compensate for the inferiority of oats kernel yield. Therefore, according to these results, wheat and barley are the best crops for general feed purposes.

## Cereal Variety Zone 2D

(See Table 17, Page 31)

**YIELD GRAIN PLUS STRAW IN POUNDS PER ACRE. Wheat.**—Little difference was apparent between any of the varieties, Thatcher outyielding Regent by only 45 pounds and Apex by 78 pounds. **Oats.**—Valor was decidedly the highest yielder, exceeding Victory and Vanguard by 107 pounds and 179 pounds respectively. **Barley.**—Newal exceeded Rex by only 48 pounds but outyielded O.A.C. 21 by nearly 400 pounds. **GRAIN YIELD IN BUSHELS PER ACRE. Wheat.**—Thatcher excelled, yielding significantly more than Apex or Regent. Apex exceeded Regent by a difference of only .2 bushel. **Oats.**—Valor exceeded Victory by 3.3 bushels and Vanguard by 4 bushels but none of the differences between the oat varieties were statistically significant. **Barley.**—Newal was the highest yielder, outyielding Rex by 1.7 bushels and O.A.C. 21 by nearly 4 bushels. Only in the case of O.A.C.

21, however, was Newal significantly higher yielding, and even here the difference was barely significant. **YIELD STRAW IN POUNDS PER ACRE.** **Wheat.**—Straw yields were in direct opposite to grain yields. While Regent led, it exceeded Apex by only 29 pounds and Thatcher by 62 pounds. **Oats.**—Little difference appeared between the yields of Victory and Valor. The yield of Vanguard was from 40 to 60 pounds less than the other varieties. **Barley.**—Rex exceeded Newal by only 37 pounds but Rex yielded more than 200 pounds more than O.A.C. 21. **"EARLINESS."** **Wheat.**—Regent excelled in this zone, ripening 1.4 days earlier than either Thatcher or Apex. **Oats.**—Valor exceeded Vanguard and Victory by 4.2 days and 8.6 days respectively. **Barley.**—Newal ripened 1.4 days earlier than O.A.C. 21 and 3.2 days earlier than Rex. **HEIGHT.** **Wheat.**—Apex exceeded Thatcher by a difference of only .3 inch. Apex and Thatcher, however, were taller than Regent by differences of 2.5 inches and 2.2 inches respectively. **Oats.**—Valor and Victory tied, exceeding Vanguard by 2.6 inches. **Barley.**—Newal was 1.1 inches taller than Rex and nearly 3 inches taller than O.A.C. 21. **STRAW STRENGTH.** **Wheat.**—Thatcher and Apex tied and were only slightly superior to Regent. **Oats.**—Valor placed first but was followed closely by Vanguard. Victory was decidedly weaker than the other varieties. **Barley.**—O.A.C. 21 and Rex tied and were slightly superior to Newal. **NECK STRENGTH OF BARLEY.** Rex was decidedly superior to Newal or O.A.C. 21. Newal was only slightly superior to O.A.C. 21. **BUSHEL WEIGHT.** **Wheat.**—Apex outweighed Regent and Thatcher by 1.6 pounds and 1.8 pounds respectively. **Oats.**—Valor excelled, exceeding Victory by 2.5 pounds and Vanguard by 3 pounds. **Barley.**—Rex again led in weight, outweighing O.A.C. 21 and Newal by differences of 3.4 pounds and 3.9 pounds respectively. **GRADES.** **Wheat.**—Some immature kernels appeared in a few samples of Apex but this variety showed considerably less defects than Thatcher and Regent. This fact, together with good bushel weight, resulted in Apex being decidedly superior in commercial grades. Pink, shrunken, immature and green kernels were in evidence in many of the samples of Thatcher and Regent, although, of these two varieties, Thatcher showed the least percentage of defects and despite the fact that it was slightly inferior in weight, Thatcher was superior to Regent in commercial grades. **Oats.**—Light weight kernels appeared in a few of the Valor samples but generally this variety showed relatively good weight and it excelled in commercial grades. Light weight and green kernels were in evidence in nearly all of the Victory and Vanguard samples. There was little difference in weight between these two varieties but Vanguard was slightly superior in grades. **Barley.**—Some light weight kernels also appeared in the barley samples. Rex excelled in commercial grades. O.A.C. 21 ranked second but was only slightly superior to Newal. **STEM RUST.** All varieties of the three crops were free of infection. **CROWN OR LEAF RUST.** **Wheat** and **Oats** were free. **Barley.**—In one test, both O.A.C. 21 and Rex appeared to be moderately infected, showing decidedly more infection than Newal. **COVERED SMUT.** **Wheat.**—No infection appeared in any of the varieties. **Barley.**—Newal only showed slight traces of infection. **LOOSE SMUT.** **Wheat.**—Only very light traces appeared in Thatcher and Regent while Apex was free. **Barley.**—Newal showed traces to moderate infection in nearly all tests. O.A.C. 21 showed traces of infection in three tests. Rex was free. **OAT SMUT.**—Vanguard was infected in only one test, the infection ranging from light to moderate. Valor and Victory were free. **SHATTERING.** **Wheat.**—Regent showed a somewhat higher loss than Thatcher and decidedly higher than the loss sustained by Apex. **Oats.**—The loss to Victory was somewhat more than to either Vanguard or Valor. **Barley.**—O.A.C. 21 suffered most loss while the loss to Rex was somewhat more than Newal.

**GENERAL RESULTS.** In previous tests, Thatcher has proved to be superior to the other varieties in this zone. In 1941 it again showed considerable merit. In grain yield it exceeded both Apex and Regent by differences which were significant and although it was somewhat low in bushel weight it was reasonably satisfactory in commercial grades. There was

no significant difference between the yield of Apex or Regent. Of these varieties Apex was superior in most characteristics and was decidedly superior in bushel weight and grades. Considering the three varieties, Thatcher and Apex made the best showing and they are officially recommended. **Oats.**—None of the grain yield differences were statistically significant. Generally, however, Valor made the best showing and the results suggest that it is at least worthy of consideration for use in this zone when the choice of a variety is being made. There was little to choose between the performance of Vanguard and Victory in so far as this test is concerned but Victory is officially recommended. In connection with this recommendation it might be again pointed out that in its report for 1942, the Saskatchewan Cereal Variety Committee lists Valor as a variety requiring further test and no attempt is made to gauge its suitability for any particular zone. **Barley.**—In grain yield, Newal yielded significantly more than O.A.C. 21 but there was no significant differences between the yields of Newal and Rex. A comparison of the two latter varieties shows that although Rex was some three days later it was superior in straw and neck strengths and was decidedly superior in bushel weight and commercial grades. When these advantages are considered there is little difference between the relative performance of Newal and Rex. Both of these varieties were decidedly superior to O.A.C. 21 and they are officially recommended for use in 1942.

In total yield grain plus straw, barley was above oats and oats exceeded wheat by a slight difference. In grain yield, however, there were no significant differences between crops. There were significant differences between tests. Barley was generally high but in some tests it was excelled by both wheat and oats. Considerable variation appeared in oats. They excelled in 40% of the tests but in another 40% oats were exceeded by both barley and wheat. In the remaining 20%, oats ranked second to wheat. Wheat failed to excel both oats and barley in any test but only in one test was it greatly excelled by both oats and barley. A study of grain yield minus hulls shows that barley excelled wheat somewhat and both decidedly excelled oats. According to the tests in this zone it would appear that barley has an advantage over wheat as feed on the farm, particularly if a smooth-awned variety is used. In kernel yield, Barley excelled oats by 48% and wheat excelled oats by 42%. The superiority of oat straw would offset this to some extent but as a general feed, barley and wheat made the best showing.

## Cereal Variety Zone 3A

(See Table 18, Page 32)

**YIELD GRAIN PLUS STRAW IN POUNDS PER ACRE. Wheat.**—Thatcher placed first, outyielding Apex and Regent by 52 pounds and 85 pounds respectively. **Oats.**—Victory excelled, exceeding Vanguard by 83 pounds and Valor by 330 pounds. **Barley.**—Newal outyielded Rex by 94 pounds and O.A.C. 21 by nearly 600 pounds. **YIELD GRAIN IN BUSHELS PER ACRE. Wheat.**—Thatcher again excelled, outyielding Regent and Apex by 2.2 bushels and 2.7 bushels respectively. None of the differences between any of the wheat varieties, however, were statistically significant. **Oats.**—Victory exceeded Valor by .3 bushel and Vanguard by 1.1 bushels, but here again none of the differences between the varieties were statistically significant. **Barley.**—Newal outyielded Rex and O.A.C. 21 by 5.5 bushels and 6.8 bushels respectively, both differences being significant. **YIELD STRAW IN POUNDS PER ACRE. Wheat.**—Apex exceeded Regent by 62 pounds and Thatcher by 110 pounds. **Oats.**—Victory outyielded Vanguard by 43 pounds. Valor was low, being exceeded by Vanguard by 273 pounds and Victory by 316 pounds. **Barley.**—Rex outyielded Newal by 162 pounds. O.A.C. 21 was 276 pounds below Newal and 438 pounds below Rex. **"EARLINESS." Wheat.**—Regent with a maturity period of 85.2 days ripened 1 day earlier than Thatcher and 1.2 days earlier than Apex. **Oats.**—Valor ripened earlier than Vanguard or Victory by 6.5 days and 11.6 days respectively. **Barley.**—

O.A.C. 21 excelled, being 2.1 days earlier than Newal and 3.3 days earlier than Rex. **HEIGHT. Wheat.**—Apex ranked first but was only .3 inch taller than Thatcher. Apex and Thatcher, however, were taller than Regent by differences of 1.4 inches and 1.1 inches respectively. **Oats.**—Victory exceeded Valor and Vanguard by nearly 3 inches but little difference appeared between the latter varieties. **Barley.**—O.A.C. 21 exceeded Newal by .6 inch and Rex by 1.3 inches. **STRAW STRENGTH. Wheat.**—Thatcher ranked first, followed by Apex and Regent in the order named. The differences between any of the varieties were not of a marked nature. **Oats.**—Valor excelled, but was followed closely by Vanguard. Victory was only slightly inferior to Vanguard. **Barley.**—Newal was decidedly superior to Rex and O.A.C. 21. The latter variety showed decided inferiority in this zone. **NECK STRENGTH OF BARLEY.** Rex ranked first, followed by Newal and O.A.C. 21 in the order named. **BUSHEL WEIGHT. Wheat.**—Apex weighed somewhat more than the other varieties. It exceeded Regent by .5 pound and outweighed Thatcher by .8 pound. **Oats.**—Valor and Victory were almost equal, outweighing Vanguard by approximately 2 pounds. **Barley.**—Rex excelled, exceeding Newal and O.A.C. 21 by 3.2 pounds and 3.4 pounds respectively. **GRADES. Wheat.**—Some shrunken, green, immature kernels appeared in nearly all samples. In a few samples of Thatcher and Apex black point was also in evidence, but generally Apex appeared to show less defects than the other varieties. In commercial grades Apex and Regent were almost equal, while Thatcher was only slightly inferior. **Oats.**—Light weight kernels were in evidence in nearly all samples. Valor weighed slightly more than Victory and excelled in grades. Vanguard, although lower in weight, was almost equal to Victory in commercial grades. **Barley.**—Weathered kernels appeared in nearly all samples. O.A.C. 21 and Rex appeared to be the most severely affected. Newal appeared to show less defects than the other varieties. Rex, however, excelled in both weight and grades. As could be expected, O.A.C. 21 was superior to Newal but the difference was not of a marked nature. **STEM RUST. Wheat.**—Only a small percentage of infection appeared in this zone. Thatcher was somewhat more infected than Apex or Regent. **Oats.**—Victory appeared to suffer more than either Valor or Vanguard. Valor showed some damage in a few tests while Vanguard was practically free from any infection. **Barley.**—Rex was slightly more infected than either O.A.C. 21 or Newal. **CROWN OR LEAF RUST.** Only slight infection was shown on any variety. **Wheat.**—Apex showed slightly more infection than either Regent or Thatcher. **Oats.**—Valor showed somewhat more infection than Vanguard or Victory. **Barley.**—Rex was slightly more infected than either O.A.C. 21 or Newal. **COVERED SMUT. Wheat.**—No infection was noticeable in any of the varieties. **Barley.**—Newal showed traces of infection and a slight infection also appeared in O.A.C. 21. **LOOSE SMUT. Wheat.**—Little difference appeared in the percentage of infection recorded, although of the three varieties, Thatcher was slightly less infected. **Barley.**—Decidedly more infection was recorded in connection with Newal than with the other varieties, although O.A.C. 21 was also fairly heavily infected. Rex, although showing traces of loose smut in a few tests, was much less infected than O.A.C. 21 or Newal. **OAT SMUT.** Vanguard although only lightly infected, showed a little more infection than Valor. Victory was free. **SHATTERING. Wheat.**—Only a light loss was reported, Thatcher showing a slightly higher loss than Apex or Regent. **Oats.**—The loss reported to Valor was somewhat more than to the other varieties. **Barley.**—Rex suffered somewhat more loss than the other barley varieties.

**GENERAL RESULTS. Wheat.**—Thatcher excelled in grain yield but there were no significant yield differences between any of the wheat varieties. In most characteristics, however, Thatcher appeared to be reasonably satisfactory and in two years out of the three-year period 1939 to 1941, it yielded significantly more than either Apex or Regent. In this test there was little difference between the performance of either Apex or Regent and an average of yields over the three-year period mentioned above shows that while Regent has slightly outyielded Apex, the latter variety has shown superiority in bushel weight and commercial grades. In the official recommendations for 1942 Thatcher and Apex are listed as varieties most

suitable for Zone 3A. It should be pointed out, however, that Regent is shown as having proved useful in this zone. **Oats.**—Victory led in grain yield followed closely by Valor and Vanguard in the order named. None of the yield differences between the oat varieties, however, were statistically significant. Vanguard and Victory are among the varieties listed by the government officials but the results of this test suggest that Valor may prove more useful than either of these varieties. It showed superiority to Vanguard and Victory in "earliness," straw strength and commercial grades and its general performance would point to its worthiness for use in this zone. **Barley.**—Newal was decidedly the highest yielder, outyielding the other varieties by significant differences. Rex yielded only slightly more than O.A.C. 21, but excelled in bushel weight and commercial grades. The general performance of O.A.C. 21 was somewhat inferior to either of the other varieties. Rex is officially recommended, but despite its lower bushel weight and inferiority in commercial grades, Newal, insofar as this test is concerned, also merits some consideration.

A study of yield grain plus straw shows that barley was decidedly above oats, and oats was above wheat, and in grain yield there were significant differences between crops. There were also significant differences between tests, the results showing that while barley yielded consistently well, in approximately one-third of the tests, oats excelled wheat and in the remaining two-thirds, wheat excelled oats. Considering the grain without the hulls, barley excelled oats by nearly 84% and it exceeded wheat by 41%. Wheat also excelled oats by 30.4%. According to the tests in this zone, barley proved decidedly more valuable than wheat or oats for feed on the farm and its value would be still further enhanced if the straw was needed and a smooth-awned variety was used. While the inferiority of oats in kernel yield would to some extent be offset by the greater usefulness of oat straw, oats are of little use in hog feeding and the results indicate that barley and wheat made the best showing for use where both cattle and hogs are to be fed.

## Cereal Variety Zone 3B

(See Table 19, Page 32)

**YIELD GRAIN PLUS STRAW IN POUNDS PER ACRE. Wheat.**—Thatcher excelled but was closely followed by Apex. Regent, however, was outyielded by Thatcher by nearly 300 pounds. **Oats.**—Victory exceeded Vanguard by approximately 300 pounds. Valor was decidedly low in this zone, yielding nearly 800 pounds less than Vanguard and 1,100 pounds less than Victory. **Barley.**—Newal exceeded O.A.C. 21 and Rex by nearly 700 pounds, the two latter varieties having tied. **YIELD GRAIN IN BUSHELS PER ACRE. Wheat.**—Thatcher was the highest yielder, outyielding Regent by 2.3 bushels and Apex by 4 bushels, but none of the differences between wheat varieties were statistically significant. **Oats.**—Victory outyielded Vanguard and Valor by 11 and 19 bushels. The difference between Victory and Vanguard was barely significant but Victory significantly outyielded Valor. **Barley.**—Newal led in yielding ability, exceeding O.A.C. 21 and Rex by highly significant differences of 7 bushels and 12.3 bushels respectively. The difference between Rex and O.A.C. 21 was also significant. **YIELD STRAW IN POUNDS PER ACRE. Wheat.**—Apex yielded nearly 150 pounds more than Thatcher and over 300 pounds more than Regent. **Oats.**—Vanguard exceeded Victory by nearly 400 pounds. Valor was decidedly outyielded by Victory and Vanguard by differences of 469 and 862 pounds respectively. **Barley.**—As might be expected from its distinct advantage in grain yield, Newal excelled but it exceeded Rex by only 51 pounds. The difference between Newal and O.A.C. 21, however, was over 300 pounds. **"EARLINESS."** **Wheat.**—Thatcher and Regent tied, but the difference between these varieties and Apex was only .3 day. **Oats.**—Valor ripened 4.2 days earlier than Vanguard and 6.2 days earlier than Victory. **Barley.**—O.A.C. 21 was .3 day earlier than Newal and .8 day earlier than Rex. **HEIGHT. Wheat.**—Apex was the tallest variety, exceeding Thatcher by 1.8 inches and Regent by

3.6 inches. **Oats.**—Victory was decidedly taller than the other varieties, exceeding Vanguard by 5.8 inches and Valor by 10.2 inches. **Barley.**—Newal exceeded Rex by a difference of only .2 inch but was 1 inch taller than O.A.C. 21. **STRAW STRENGTH. Wheat.**—Thatcher excelled but Apex and Regent followed closely in the order named. **Oats.**—Victory appeared somewhat superior to Valor and Vanguard. The latter varieties were equal. **Barley.**—Newal was somewhat superior to Rex and decidedly superior to O.A.C. 21. **NECK STRENGTH OF BARLEY.** Rex excelled and was followed by Newal and O.A.C. 21 in the order named. **BUSHEL WEIGHT. Wheat.**—Apex exceeded Thatcher and Regent by slight differences of .2 pound and .4 pound respectively. **Oats.**—Victory excelled, exceeding Valor by .9 pound and Vanguard by 1.7 pounds. **Barley.**—Rex outweighed O.A.C. 21 and Newal by differences of approximately 1.8 pounds. **GRADES. Wheat.**—Green and immature kernels were in evidence in all samples. Apex ranked first, grading somewhat better than Thatcher. In addition to "bleach" and "green," some pink, immature kernels appeared in the Regent variety which caused a lowering of the grades. **Oats.**—Green and weathered kernels were in evidence in a number of samples although Victory appeared to show the least percentage of defects, and this variety ranked first in commercial grades. Little difference appeared between Valor and Vanguard although of the two, Vanguard was slightly superior. **Barley.**—Shrunken and weathered kernels appeared in all varieties. O.A.C. 21 graded better than Newal but the difference was not of a marked nature. The two-rowed variety, Rex, generally graded decidedly higher than O.A.C. 21 or Newal. **STEM, CROWN OR LEAF RUST.** None of the varieties of the different crops showed any infection of this nature. **COVERED SMUT.** None of the varieties of wheat or barley were affected. **LOOSE SMUT. Wheat.**—The three varieties were free. **Barley.**—Rex was free and the light infection appearing in Newal was only slightly more than in O.A.C. 21. **OAT SMUT.** Valor was free and only in one test were traces of infection in evidence in the Vanguard and Victory varieties. **SHATTERING. Wheat.**—Apex showed a small loss in one test but only slightly more than either of the other varieties. **Oats.**—Vanguard and Victory suffered slightly higher losses than Valor. **Barley.**—The loss suffered by O.A.C. 21 was decidedly more than Newal or Rex, while Newal suffered slightly more than Rex.

**GENERAL RESULTS. Wheat.**—As in previous tests, the performance of Thatcher appears to be satisfactory. The results of this test show that Apex, although exceeded in yield by Regent, was not outyielded by a significant difference and in nearly all other characteristics Apex was the superior of the two varieties. This test, however, and the recommendations of the Saskatchewan Cereal Variety Committee for 1942 indicate the suitability of Thatcher for use in this zone. **Oats.**—In this test, despite the fact



Inspecting the Test of Ross Gordon Johnson, Pelly

that it was slightly later than Vanguard and decidedly later than Valor, Victory excelled. It was also reasonably satisfactory in the test conducted in 1940. It is also officially recommended. **Barley.**—Of the three varieties, Newal showed the best results. Considering grain yield only, it significantly outyielded the other varieties and despite the fact that it graded somewhat low, it was generally superior to either O.A.C. 21 or Rex. In parts of this zone, if straw is not an important factor to the grower it might be preferable to grow a malting barley. In this test, the O.A.C. 21 variety has made a reasonably good showing and it is one of the varieties recommended by the Government officials for use in Zone 3B.

In total yield of grain plus straw, barley was above wheat and wheat was above oats, but in grain yield there were no significant differences between crops. There were significant differences between tests and the results showed that while barley yielded well in all three tests, wheat decidedly excelled oats in one test and was greatly excelled by oats in another. Considering the grain without hulls, wheat excelled barley somewhat and both decidedly excelled oats. In this zone, according to the tests, wheat and barley proved to be about equally valuable for feed on the farm, provided barley straw could be ranked higher in value than wheat straw as would be the case with a smooth-awned variety. In kernel yield, wheat and barley exceeded oats by 45% and 40% respectively. The greater usefulness of oat straw would offset this to some extent. On the other hand, as oats are of little use in hog feeding, wheat and barley made the best showing for use on a farm with both cattle and hogs, whereas oats would only be used where the straw was needed.

## Cereal Variety Zone 3C

(See Table 20, Page 33)

**YIELD GRAIN PLUS STRAW IN POUNDS PER ACRE. Wheat.**—Thatcher was again high, exceeding Apex by 77 pounds and Regent by 231 pounds. **Oats.**—Victory outyielded Vanguard by approximately 400 pounds and Valor by 625 pounds. **Barley.**—Rex was the highest yielder but was only 61 pounds higher than Newal. Rex exceeded O.A.C. 21, however, by over 500 pounds. **YIELD GRAIN IN BUSHELS PER ACRE. Wheat.**—Thatcher yielded significantly more than Apex or Regent although in the case of Apex the difference was only barely significant. Apex outyielded Regent by 1.1 bushels but the difference was not significant. **Oats.**—Victory excelled, yielding significantly more than either Vanguard or Valor. Vanguard outyielded Valor by a significant difference. **Barley.**—Newal significantly outyielded Rex and O.A.C. 21. Rex yielded 3.5 bushels more than O.A.C. 21, a difference which was also significant. **YIELD STRAW IN POUNDS PER ACRE. Wheat.**—While Apex was the highest yielder, it exceeded Thatcher by only 39 pounds and Regent by 83 pounds. **Oats.**—Victory was decidedly the highest yielder, exceeding Vanguard by nearly 200 pounds and Valor by 271 pounds. **Barley.**—Rex was high, outyielding Newal and O.A.C. 21 by 233 pounds and 340 pounds respectively. **"EARLINESS." Wheat.**—Regent excelled, ripening 1 day earlier than Thatcher and nearly 3 days earlier than Apex. **Oats.**—Valor exceeded Vanguard by 8.3 days and Victory by 9 days. **Barley.**—O.A.C. 21 and Newal were almost equal, ripening approximately 1.5 days earlier than Rex. **HEIGHT. Wheat.**—Regent exceeded Apex by only .3 inch but was 2.4 inches taller than Thatcher. **Oats.**—Victory excelled, exceeding Vanguard and Valor by 2.2 inches and 4.1 inches respectively. **Barley.**—Newal was the tallest variety, exceeding O.A.C. 21 and Rex by nearly 1 inch. **STRAW STRENGTH. Wheat.**—Thatcher led but was followed closely by Apex and Regent in the order named. **Oats.**—Vanguard and Victory tied, being only slightly superior to Valor. **Barley.**—Newal and Rex also tied and were somewhat superior to O.A.C. 21. **NECK STRENGTH OF BARLEY.** Rex excelled, followed by Newal and O.A.C. 21 in the order named. **BUSHEL WEIGHT. Wheat.**—Apex again led in bushel weight, exceeding Thatcher by .7 pound and Regent by 1 pound. **Oats.**—Victory outweighed Valor and Vanguard by

differences of 1.6 pounds and 2.7 pounds respectively. **Barley.**—Rex again excelled, exceeding Newal by 3.3 pounds and O.A.C. 21 by 4 pounds. **GRADES. Wheat.**—Light weight, bleached, green and immature kernels appeared in many samples. Apex, however, showed decidedly less defects than Thatcher and the defects in the Thatcher variety were somewhat less than in Regent. This combined with bushel weight resulted in Apex excelling in commercial grades followed by Thatcher and Regent in the order named. **Oats.**—Thin and light weight kernels were the only defects noted in the oat varieties. Victory, however, was decidedly high in bushel weight and excelled in grades. Valor exceeded Vanguard in weight per bushel but there was little difference between these varieties in commercial grades. **Barley.**—An abundance of light weight and weathered kernels appeared in all varieties. Rex, however, was distinctly high in bushel weight and grades. O.A.C. 21 weighed little less than Newal and as could be expected, this rough-awned variety exceeded Newal in grades. **STEM RUST. Wheat.**—Only a light infection was reported in one or two tests and little difference was shown between varieties. **Oats.**—Victory was only lightly infected but showed a few more infected stems than the other varieties. **Barley.**—Newal was only slightly more infected than the other varieties. **LEAF OR CROWN RUST. Wheat.**—Little difference appeared in the percentage of infection appearing in the varieties. **Oats.**—Valor appeared to be slightly more infected than Vanguard or Victory. **Barley.**—Rex showed slightly more infection than the other varieties. **COVERED SMUT. Wheat.**—All varieties were free. **Barley.**—Newal showed approximately twice the infection appearing in the other varieties. **LOOSE SMUT. Wheat.**—Apex showed a few more infected heads than Thatcher or Regent. **Barley.**—Newal was most heavily infected although in some tests O.A.C. 21 also showed a number of infected heads. By comparison Rex was almost free. **OAT SMUT.**—Vanguard was decidedly more infected with smut than Valor or Victory. **SHATTERING. Wheat.**—The loss sustained by all varieties was almost equal. **Oats.**—The loss to Valor was only slightly more than to Victory or Vanguard. **Barley.**—Newal sustained a slightly higher loss than the other varieties.

**GENERAL RESULTS. Wheat.**—In 1939 and 1940 when Thatcher, Apex and Regent were included in the tests, Thatcher was significantly higher in yield than any of the other varieties. In this test it also exceeded both Apex and Regent by significant differences and despite its slight inferiority to Apex in bushel weight and commercial grades, it appeared to make the best showing. Apex, however, was distinctly better than Regent in most characteristics. Therefore, the results indicate that Thatcher and Apex are the best varieties for use in this zone and these are the varieties recommended by the Saskatchewan Cereal Variety Committee. **Oats.**—Victory yielded significantly more than either Vanguard or Valor while in this zone Vanguard exceeded Valor by a difference which was significant. While the "earliness" of Valor was an advantage, the results suggest that Victory was the best variety with Vanguard taking second place. These two varieties are listed in the Saskatchewan Grain Variety Recommendations for 1942 for use in this zone. **Barley.**—Newal was the highest yielder, significantly outyielding the other varieties. It was, however, slightly inferior to Rex in neck strength and decidedly inferior in bushel weight and commercial grades. Rex exceeded O.A.C. 21 by a difference which was significant and in other characteristics it was reasonably satisfactory. In this zone there are areas well suited to the production of a malting barley. The choice of a variety depends largely upon whether the market value of a malting barley is appreciably higher than that of other barley and whether or not the straw is needed for feed. In this test O.A.C. 21 was significantly outyielded by both Newal and Rex and only a small percentage was suitable for malting purposes. Therefore, Rex and Newal made the best showing.

In gross yield grain plus straw, barley was above wheat and wheat was above oats, and in grain yield there were significant differences between crops. There were also significant differences between tests and the results show that while barley was a reasonably satisfactory yielder in all tests, oats greatly excelled wheat in a number of tests and in others wheat ex-

celled oats by large differences. When grain minus hulls is considered, barley exceeded wheat and both greatly excelled oats. In this zone barley was somewhat more valuable than wheat for feed on the farm, particularly if the barley straw could be considered more useful as would be the case with a smooth-awned variety. In kernel yield, barley excelled oats by 69% and wheat excelled oats by 60%. While the oat straw would rank high in value and would to some extent compensate the inferiority of oats in kernel yield, the higher kernel yield of barley and wheat and the unsuitability of oats for hog feeding would definitely point to the superiority of barley and wheat for feed on a farm, particularly where both hogs and cattle are to be fed.

### Cereal Variety Zone 3D

(See Table 21, Page 33)

**YIELD GRAIN PLUS STRAW IN POUNDS PER ACRE.** **Wheat.**—Thatcher excelled, outyielding Apex and Regent by approximately 100 pounds. **Oats.**—Victory placed first. It yielded 621 pounds more than Vanguard and exceeded Valor by 1,166 pounds. **Barley.**—Newal outyielded Rex by only 74 pounds but exceeded O.A.C. 21 by 455 pounds. **GRAIN YIELD IN BUSHELS PER ACRE.** **Wheat.**—Thatcher ranked first, yielding 1.4 bushels more than Regent and 2.8 bushels more than Apex but none of the differences between the wheat varieties were statistically significant. **Oats.**—Victory averaged 51 bushels per acre and outyielded Vanguard and Valor by 3.4 bushels and 13.4 bushels respectively; only in the case of Valor was the difference significant. **Barley.**—Newal excelled, followed by Rex and O.A.C. 21 but none of the yield differences between the barley varieties were significant. **YIELD STRAW IN POUNDS PER ACRE.** **Wheat.**—Little difference appeared between the yields of any of the varieties, Apex exceeding Thatcher and Regent by slight differences. **Oats.**—As might be expected, the yield of Victory was decidedly higher than the other varieties, exceeding Vanguard by 512 pounds and Valor by 781 pounds. **Barley.**—The yields of Rex, Newal and O.A.C. 21 ranked in the order named, Rex exceeding the two latter varieties by 102 pounds and 185 pounds respectively. **"EARLINESS."** **Wheat.**—Regent excelled, being 1 day earlier than Thatcher and 1.8 days earlier than Apex. **Oats.**—Valor ripened earlier than Vanguard by 5.8 days and exceeded Victory by 11.8 days. **Barley.**—Little differences appeared in the maturity periods of any of the varieties. O.A.C. 21 was the earliest variety but it exceeded Rex by only .3 day and Newal by .5 day. **HEIGHT.** **Wheat.**—Apex exceeded Thatcher by .5 inch. These two varieties were taller than Regent by differences of 1.7 inches and 1.2 inches respectively. **Oats.**—Victory exceeded Valor by 3.5 inches and Vanguard by 3.7 inches. **Barley.**—Newal and Apex tied, being .7 inch taller than O.A.C. 21. **STRAW STRENGTH.** **Wheat.**—Thatcher excelled, being somewhat stronger than Apex and decidedly superior to Regent. **Oats.**—All varieties were equal in this characteristic. **Barley.**—Rex excelled, but was followed closely by Newal and O.A.C. 21 in the order named. **NECK STRENGTH OF BARLEY.** Rex was only slightly superior to Newal and O.A.C. 21, the two latter varieties being equal. **BUSHEL WEIGHT.** **Wheat.**—Apex again excelled, outweighing Thatcher by .5 pound and Regent by .7 pound. **Oats.**—Victory exceeded Valor by only .3 pound but weighed 3.5 pounds more than Vanguard. **Barley.**—Rex was decidedly superior to the other varieties, exceeding Newal by 2.7 pounds and O.A.C. 21 by 3.3 pounds. **GRADES.** **Wheat.**—Some green and immature kernels appeared in all varieties and in one sample of Regent shrunken kernels were also in evidence. Apex excelled in commercial grades. There was little difference in the grades placed on Thatcher or Regent. **Oats.**—Some green kernels appeared in all varieties. Victory was somewhat superior to Valor in commercial grades while Valor graded decidedly better than Vanguard. **Barley.**—O.A.C. 21 contained some green, immature and weathered kernels. Some weathered kernels also appeared in the samples of Newal and Rex. The superiority of Rex in bushel weight resulted in this variety excelling in commercial

grades. As could be expected, the rough-awned variety O.A.C. 21 was superior in grades to Newal. **STEM RUST. Wheat.**—A small and more or less equal amount of infection appeared on all varieties. **Oats.**—All varieties appeared to be free. **Barley.**—Rex only showed a small percentage of infection in one test. **CROWN OR LEAF RUST.** All varieties of the three crops were free of infection. **COVERED SMUT. Wheat.**—No infection appeared in any of the varieties. **Barley.**—O.A.C. 21 appeared to be slightly more infected than Newal or Rex. **LOOSE SMUT. Wheat.**—All varieties were free. **Barley.**—Rex was free. O.A.C. 21 showed only slight traces of infection but Newal was infected to a moderate degree in a number of tests. **OAT SMUT.** Valor was free and Victory was almost free. Vanguard showed infection which ranged from light to moderate. **SHATTERING. Wheat.**—Apex appeared to suffer slightly more loss than either Thatcher or Regent. **Oats.**—The loss to Valor was slightly less than to Vanguard or Victory. **Barley.**—Shattering in O.A.C. 21 was approximately twice that suffered by the other varieties.

**GENERAL RESULTS. Wheat.**—There were no significant grain yield differences between any of the wheat Varieties. In previous tests Thatcher has proved satisfactory and in 1941 it appeared to make the best showing. It was one day later than Regent but was satisfactory in height and excelled in straw strength. It was also reasonably satisfactory in bushel weight and grades. Regent outyielded Apex but the difference was not significant. Regent was nearly two days earlier than Apex but was somewhat inferior to the latter variety in height, straw strength, and bushel weight. Considering the three-year period 1939-1941 there was practically no difference in the yield between these two varieties but in bushel weight and commercial grades, Apex was decidedly superior. Therefore Thatcher and Apex appear to be most worthy of consideration and these are the varieties officially recommended. **Oats.**—Victory was the highest yielder. The difference between Victory and Vanguard failed to equal the necessary difference for the zone, but Victory yielded significantly more than Valor. Vanguard ranked second in yield and the difference between this variety and Valor was also significant. Valor, however, was six days earlier than Vanguard and exceeded the latter variety in weight and commercial grades. Valor exceeded Victory in "earliness" by 12 days. There was little difference between these varieties in bushel weight or commercial grades. Vanguard and Victory are two of the oat varieties officially recommended for use in this zone. In this test, apart from its longer maturity period, Victory was the superior of these two varieties. Despite its lower yield the "earliness" and the relatively good grades of Valor may also be worthy of attention where the choice of a variety is being made. **Barley.**—Newal led in grain yield and was followed by Rex and O.A.C. 21 in the order named. None of the grain yield differences between the barley varieties, however, were statistically significant. In this test there appeared to be little difference in the general performance of Newal and Rex. The latter variety excelled in straw strength, neck strength, bushel weight and commercial grades. Taking the results of this test, however, combined with those of 1940, Newal was superior to Rex and of these two varieties Newal is officially recommended. O.A.C. 21 is also listed in the official recommendations for 1942 but in this test its performance was not outstanding. Its use, of course, depends upon whether the premium for malting barley would offset its lower yield and whether or not the barley straw is required for feed.

In total yield of grain plus straw, barley was above wheat and wheat was above oats, but in grain yield there were no significant differences between crops. There were significant differences between tests. Barley greatly excelled wheat and oats in three out of the five tests. In one test wheat exceeded barley, and in the other, barley was outyielded by oats. Sharp variations occurred in the different tests between the yield of wheat and oats. When grain minus hulls is considered, barley excelled wheat by approximately 7% and wheat was 39% higher than oats. These results indicate that barley was somewhat more valuable than wheat for feed on

the farm, particularly if the straw was needed and a smooth-awned variety was used. The kernel yield of oats was lower than either barley or wheat and although the oat straw would be more useful this would hardly offset its kernel yield inferiority.

## Cereal Variety Zone 3E

(See Table 22, Page 34)

**YIELD GRAIN PLUS STRAW IN POUNDS PER ACRE.** **Wheat.**—Little difference appeared between the yields of any of the varieties, Thatcher outyielding Regent and Apex by 22 pounds and 90 pounds respectively. **Oats.**—Victory excelled, exceeding Vanguard by 183 pounds and Valor by 213 pounds. **Barley.**—Newal outyielded Rex by only 41 pounds but exceeded O.A.C. 21 by a difference of 471 pounds. **YIELD GRAIN IN BUSHELS PER ACRE.** **Wheat.**—Thatcher led in yielding ability, outyielding Apex by a significant difference. Thatcher failed to exceed Regent, however, by a difference which equalled the necessary difference for the zone. No difference of a significant nature appeared between Regent and Apex. **Oats.**—Victory ranked first followed by Valor and Vanguard in the order named but none of the differences between the oat varieties were statistically significant. **Barley.**—Newal excelled, outyielding Rex by 3.3 bushels and O.A.C. 21 by 5.6 bushels, both differences being significant. **YIELD STRAW IN POUNDS PER ACRE.** **Wheat.**—There were only slight differences between any of the varieties. **Oats.**—Victory excelled, outyielding Vanguard and Valor by 113 pounds and 182 pounds respectively. **Barley.**—Rex was high in straw yield, exceeding Newal by 120 pounds and O.A.C. 21 by 326 pounds. **"EARLINESS."** **Wheat.**—Regent excelled, exceeding Thatcher by .8 day and Apex by 1.5 days. **Oats.**—Valor ripened 5.8 days earlier than Vanguard and 8.8 days earlier than Victory. **Barley.**—O.A.C. 21 matured slightly earlier than Newal and nearly 2 days earlier than Rex. **HEIGHT.** **Wheat.**—Apex was the tallest variety, exceeding Regent by .6 inch and Thatcher by 1.2 inches. **Oats.**—Victory again excelled, being taller than Valor or Vanguard by differences of 1.2 inches and 2.8 inches respectively. **Barley.**—Newal was .8 inch taller than O.A.C. 21 and 1.3 inches taller than Rex. **STRAW STRENGTH.** **Wheat.**—Thatcher was only slightly superior to Apex and Regent, the two latter varieties having tied. **Oats.**—Victory was only slightly superior to Valor and Vanguard which also tied. **Barley.**—All varieties were equal in this characteristic. **NECK STRENGTH OF BARLEY.** Rex excelled, followed in sequence by O.A.C. 21 and Newal. **BUSHEL WEIGHT.** **Wheat.**—Apex again excelled, outweighing Regent and Thatcher by differences of 1.1 pounds and 1.7 pounds respectively. **Oats.**—Valor showed the best weight in this zone, exceeding both Vanguard and Victory by nearly 2 pounds. **Barley.**—Rex exceeded Newal and O.A.C. 21 by marked differences of 4.3 pounds and 4.8 pounds respectively. **GRADES.** **Wheat.**—An abundance of bleached, shrunken or immature kernels appeared in all varieties. Apex, however, showed somewhat less defects than Thatcher or Regent and this fact, combined with good bushel weight, resulted in the Apex variety excelling in commercial grades. There was little difference between the grades placed on Thatcher or Regent although of the two, Regent had a slight advantage. **Oats.**—Light weight kernels were the cause of a lowering of the grades in many of the oat samples. Valor, however, showed good weight and excelled in commercial grades while Victory graded slightly better than Vanguard. **Barley.**—Light weight kernels appeared to be the chief defect in the barley varieties, but many samples of Rex were somewhat weathered. The excellent bushel weight of the Rex variety, however, more than offset the defects mentioned and it decidedly excelled in grades. There appeared to be little difference between the grades of Newal and O.A.C. 21 although of the two Newal was somewhat superior. **STEM, CROWN OR LEAF RUST.** No infection was reported in this zone. **COVERED SMUT.** **Wheat.**—All varieties were free. **Barley.**—Newal showed some infection in one test. O.A.C. 21 was almost free. Rex was free. **LOOSE SMUT.** **Wheat.**—Only traces of infection

were reported and the percentage in each variety was almost equal. **Barley.**—Newal was heavily infected. Traces of infection appeared in O.A.C. 21 in a number of tests and this variety appeared to be somewhat more infected than Newal. **OAT SMUT.** Vanguard showed decidedly more infection than Valor or Victory. **SHATTERING.** Wheat and Oats.—Only a small percentage of loss was reported and appeared to be almost equal in all varieties. **Barley.**—O.A.C. 21 suffered somewhat more loss than Newal or Rex.

**GENERAL RESULTS. Wheat.**—Thatcher led in grain yield and while it failed to outyield Regent by a difference which equalled the necessary difference for the zone it yielded significantly more than Apex. Thatcher was decidedly inferior to Apex in weight and commercial grades which to some extent offset its superiority in yield, but despite this fact it still held a slight advantage. In previous tests Thatcher has proved suitable for use in this zone. There was no significant difference between the yields of Apex and Regent, and Apex was decidedly superior in commercial grades. An average of the three years' tests 1939 to 1941 shows that Regent has outyielded Apex by a difference of .7 bushel but each year Apex has been decidedly superior in commercial grades. Thatcher and Apex are the varieties officially recommended for use in this zone. **Oats.**—There were no significant grain yield differences between oat varieties. Valor was only 1 bushel lower in yield and was superior in weight and commercial grades and was nearly nine days earlier than Victory. Vanguard was low in yield, bushel weight and commercial grades and was not outstanding in any other characteristic. In general, it would appear that Valor is at least worthy of consideration for use in this zone. It was more or less equal or superior to Victory in most characteristics and its extreme "earliness" is a distinct advantage. Victory is officially recommended and in this test its performance was reasonably satisfactory. In connection with the official recommendations it should be noted that in its report for 1942 the Saskatchewan Cereal Variety Committee lists Valor as a variety requiring further test and no recommendations are made insofar as cereal zones are concerned. **Barley.**—Newal outyielded both Rex and O.A.C. 21 by differences which were significant. It was reasonably early maturing, excelled in height and tied with the other varieties in strength of straw. Rex ranked second in yield but was approximately 2 days later, somewhat shorter, but excelled in neck strength. It also excelled, however, in bushel weight and showed some superiority in commercial grades. O.A.C. 21 was significantly lower in grain yield than either of the other varieties and exhibited no particular merit. The results indicate that Newal and Rex made the best showing and these are the varieties officially recommended.

In yield grain plus straw, barley was above wheat and oats. The two latter crops were almost equal. In grain yield there were significant differences between crops. There were also significant differences between tests, and the results show that while barley generally yielded well, in one or two tests it was greatly excelled by both wheat and oats. Oats excelled wheat in 64% of the tests but in some of the remaining tests wheat decidedly excelled oats. When grain minus hulls is considered, barley excelled wheat and both excelled oats. As feed on the farm, barley appeared to be the best crop, particularly if a smooth-awned variety is used. In kernel yield, barley excelled oats by 48% and wheat excelled oats by 34%. While the greater usefulness of oat straw would tend to offset this advantage to some extent, as mentioned previously, oats are of little use in hog feeding and the results in this zone would suggest that on a farm where both cattle and hogs are to be fed, barley and wheat are most valuable. Oats would be preferable only when the straw is needed.

## Cereal Variety Zone 4A

(See Table 23, Page 34)

**YIELD GRAIN PLUS STRAW IN POUNDS PER ACRE. Wheat.**—Apex outyielded Regent and Thatcher by approximately 350 pounds. **Oats.**—Victory exceeded Vanguard and Valor by 454 pounds and 631 pounds re-

spectively. **Barley.**—Rex outyielded Newal by only 18 pounds. These varieties exceeded O.A.C. 21 by over 500 pounds. **YIELD GRAIN IN BUSHEL PER ACRE. Wheat.**—Thatcher outyielded Apex by 1.3 bushels and Regent by 3 bushels but none of the differences between the wheat varieties were statistically significant. **Oats.**—Victory excelled. It outyielded Valor by 11 bushels, a difference which was significant but although Victory exceeded Vanguard by 5.3 bushels, this difference failed to equal the necessary difference for the zone. **Barley.**—Newal led in yielding ability but it failed to yield significantly more than Rex. Both Newal and Rex, however, exceeded O.A.C. 21 by differences which were significant. **YIELD STRAW IN POUNDS PER ACRE. Wheat.**—Apex exceeded Regent and Thatcher by differences of 239 pounds and 414 pounds respectively. **Oats.**—Victory led, followed by Valor and Vanguard, but the differences between any of the varieties were only of a slight nature. **Barley.**—Rex excelled, outyielding Newal and O.A.C. 21 by differences of 100 pounds and nearly 300 pounds respectively. **"EARLINESS." Wheat.**—Regent excelled, being one day earlier than Apex and 1.5 days earlier than Thatcher. **Oats.**—Valor was 7 days earlier than either Vanguard or Victory which in this zone appeared to be equal in their maturity periods. **Barley.**—O.A.C. 21 ranked first, maturing 1 day earlier than Newal and 1.5 days earlier than Rex. **HEIGHT. Wheat.**—Apex was the tallest variety but it exceeded Thatcher by only .4 inch. Apex and Thatcher exceeded Regent by 2.8 inches and 2.4 inches respectively. **Oats.**—Victory was decidedly taller than the other varieties, exceeding Vanguard by 3.4 inches and Valor by 4 inches. **Barley.**—Rex exceeded O.A.C. 21 and Newal by 1.2 inches, the two latter varieties being equal. **STRAW STRENGTH. Wheat.**—Thatcher was only slightly superior to Apex and Regent, which tied in this characteristic. **Oats.**—Valor and Vanguard tied, showing some superiority to Victory. **Barley.**—Rex was only slightly superior to O.A.C. 21 and Newal. The two latter varieties also tied. **NECK STRENGTH OF BARLEY.** Rex ranked first and was followed by O.A.C. 21 and Newal in the order named. **BUSHEL WEIGHT. Wheat.**—Apex excelled, outweighing both Thatcher and Regent by approximately .5 pound. **Oats.**—Valor excelled, exceeding Victory by 1 pound and Vanguard by 1.8 pounds. **Barley.**—Rex outweighed O.A.C. 21 and Newal by 2.8 pounds, the two latter varieties having tied. **GRADES. Wheat.**—Some shrunken, green, pink or immature kernels appeared in all samples but Apex showed less defects than the other varieties. This fact, combined with its superior bushel weight gave it an advantage in commercial grades. Thatcher graded somewhat better than Regent. **Oats.**—Light weight and weathered kernels appeared in all varieties. There was little to choose between the grades of any of the varieties, although Valor appeared to have a slight advantage. **Barley.**—In one test the sample of O.A.C. 21 variety contained some green kernels, otherwise the barley samples appeared to be free of any serious defects. Rex showed decidedly the best grades followed by O.A.C. 21 and Newal in the order named. **STEM, CROWN OR LEAF RUST.** No infection was reported. **COVERED SMUT.** All varieties of wheat and barley were free of infection. **LOOSE SMUT. Wheat.**—All varieties were free. **Barley.**—O.A.C. 21 and Newal showed the largest number of infected heads but in one test Rex also showed a moderate degree of infection. **OAT SMUT.** Victory and Valor showed traces of infection, while Vanguard showed somewhat more infection than either of these varieties. **SHATTERING.** No losses were reported in this zone.

**GENERAL RESULTS. Wheat.**—None of the differences between grain yields were statistically significant. Apart from yield, Apex was superior to Thatcher in all characteristics but the differences were not of a marked nature and generally the performance of Thatcher was reasonably satisfactory. In previous tests, Thatcher has proved to be most satisfactory in this zone. It is also officially recommended. **Oats.**—Victory led in grain yield. The difference between Victory and Vanguard was not significant but Victory yielded significantly more than Valor. Valor was 7 days earlier than either of the other varieties and excelled in bushel weight and commercial grades. The comparatively high yield of Victory, however, despite some inferiority in other characteristics suggests that it is most worthy

of consideration. In the test conducted in 1940, Victory was also reasonably satisfactory and it is officially recommended for this zone. **Barley.**—O.A.C. 21 yielded significantly lower than either Newal or Rex. The difference between grain yields of the two latter varieties was not significant. The choice of a variety, of course, depends largely upon its intended use but if feed is the object, the general performance of Newal indicates its suitability. This variety is also officially recommended.

In gross yield, grain plus straw, barley was above wheat and wheat was above oats, but in grain yield there were no significant differences between crops. There were, however, highly significant differences between tests and the results showed that while barley yielded relatively well in all tests, oats was excelled by wheat in two-thirds of the tests, while wheat decidedly excelled oats in one-third of the tests. When grain minus hulls is considered, wheat excelled barley and both decidedly excelled oats. According to the results of the tests in this zone, barley appeared to be about equal to wheat for use as feed on the farm, providing, of course, a smooth-awned variety is used. Even after considering the greater usefulness of oat straw, the lower kernel yield of oats would suggest that either wheat or barley would be the most valuable feed crop.

## Cereal Variety Zone 4B

(See Table 24, Page 35)

**YIELD GRAIN PLUS STRAW IN POUNDS PER ACRE.** **Wheat.**—Regent was the highest yielder, exceeding Apex and Thatcher by 164 pounds and 226 pounds respectively. **Oats.**—Victory outyielded Vanguard by 90 pounds and Valor by 537 pounds. **Barley.**—Newal led in gross yield, exceeding Rex by 444 pounds and O.A.C. 21 by 564 pounds. **YIELD GRAIN IN BUSHELS PER ACRE.** **Wheat.**—Although Regent was high it outyielded Thatcher and Apex by only .4 bushel and 1 bushel respectively, neither difference being significant. **Oats.**—Victory led in yielding ability, exceeding Vanguard by 5 bushels and Valor by 5.8 bushels but here again neither difference was statistically significant. **Barley.**—Newal was decidedly the highest yielder. It exceeded Rex by 11.6 bushels and O.A.C. 21 by 12.2 bushels, both differences being significant. **YIELD STRAW IN POUNDS PER ACRE.** **Wheat.**—Regent led in straw yield, exceeding Apex by nearly 100 pounds and Thatcher by over 200 pounds. **Oats.**—Vanguard was high, outyielding Victory and Valor by 79 pounds and 422 pounds respectively. **Barley.**—Rex outyielded both O.A.C. 21 and Newal by approximately 100 pounds, the two latter varieties being almost equal. **"EARLI-NESS."** **Wheat.**—Regent ripened 1 day earlier than either Thatcher or Apex. **Oats.**—Valor was 8.5 days earlier than Vanguard and 10 days earlier than Victory. **Barley.**—Newal exceeded the other varieties by the following differences, O.A.C. 21, 3 days, and Rex, 7 days. **HEIGHT.** **Wheat.**—Regent excelled, being 1 inch taller than Apex and 2.2 inches taller than Thatcher. **Oats.**—Victory was the tallest variety, exceeding Vanguard and Valor by 1.3 inches and 3.5 inches respectively. **Barley.**—O.A.C. 21 was 1.4 inches taller than Newal and nearly 4 inches taller than Rex. **STRAW STRENGTH.** All varieties in this zone showed some inferiority in this characteristic compared to other zones. **Wheat.**—Thatcher ranked first but the difference between this variety and Apex was not of a marked nature. Regent was decidedly inferior to the other varieties. **Oats.**—Vanguard was only slightly superior to Valor but decidedly superior to Victory. **Barley.**—Newal showed decided superiority to Rex and the latter variety was somewhat superior to O.A.C. 21. **NECK STRENGTH OF BARLEY.** Rex was somewhat superior to Newal and O.A.C. 21, the two latter varieties having tied in this characteristic. **BUSHEL WEIGHT.** **Wheat.**—Apex excelled, outweighing Regent by 1.3 pounds and Thatcher by 1.7 pounds. **Oats.**—Valor was distinctly superior to Victory and Vanguard, outweighing these varieties by differences of 1.9 pounds and 4.5 pounds respectively. **Barley.**—Rex excelled, outweighing both Newal and O.A.C. 21 by approximately 5 pounds. **GRADES.** **Wheat.**—Some shrunken, green, and immature kernels

were in evidence in all varieties but Apex appeared to show less defects than Thatcher or Regent and this fact, together with a distinct advantage in weight, placed Apex first in commercial grades. Regent slightly exceeded Thatcher in grades. **Oats.**—Light weight kernels were in evidence in Vanguard and Victory. Valor was free from these defects and ranked first in commercial grades. Vanguard was somewhat superior to Victory. **Barley.**—Light weight kernels appeared in all varieties and in one test the sample of Rex was slightly weathered. Despite this, however, Rex was decidedly high in commercial grades. As could be expected of the two six-row varieties, O.A.C. 21 was superior to Newal. **STEM, CROWN OR LEAF RUST.** No infection was reported. **COVERED SMUT. Wheat.**—All varieties were free. **Barley.**—O.A.C. 21 showed slightly more infection than Newal. Rex was free. **LOOSE SMUT. Wheat.**—All varieties were free. **Barley.**—Newal showed much more infection than O.A.C. 21 or Rex. **OAT SMUT.** Vanguard showed decidedly more infection than either of the other varieties. **SHATTERING. Wheat.**—Apex and Regent each showed a slight loss but no loss was sustained by Thatcher. **Oats.**—The loss to Vanguard and Victory was almost equal and was more than the loss suffered by Valor. **Barley.**—Little difference appeared between the loss sustained by any of the varieties.

**GENERAL RESULTS. Wheat.**—While Regent was the highest yielder, it failed to outyield either of the other varieties by a significant difference. It was one day earlier and slightly taller than Apex or Thatcher but was somewhat inferior in straw strength, and, although it showed fairly good weight it was at least lower than Apex in commercial grades. Thatcher was second in grain yield but not significantly higher than Apex. It was somewhat shorter than Apex but showed slight superiority in straw strength. Thatcher was only slightly lower than the other varieties in bushel weight. It showed slight inferiority to Regent in commercial grades and graded decidedly lower than Apex. The results of this test would suggest that despite its slight inferiority in bushel weight and its lower grades, Thatcher is at least worthy of consideration when the choice of a variety is being made. This is confirmed by the results of tests conducted from 1936 to 1940, Thatcher being consistently a high yielder. It is also officially recommended. **Oats.**—None of the differences in the grain yield of the varieties were statistically significant. Victory was the highest yielder but it was the latest maturing variety, was inferior in straw strength and commercial grades. There was little difference in the grain yields of Vanguard or Valor but Valor was high in weight and commercial grades and in this northern zone its earliness may influence the grower in its favor. **Barley.**—In grain yield Newal significantly outyielded both O.A.C. 21 and Rex. The choice of a variety depends, of course, upon its intended use. In this zone neither O.A.C. 21 or Rex is officially recommended and at least for feed purposes, Newal was decidedly the best of the three varieties.

In total yield of grain plus straw, barley exceeded wheat by only a slight difference but each of these crops outyielded oats by a difference of approximately 400 pounds. In grain yield, however, there were no significant differences between crops. There were significant differences between tests and the individual results showed considerable variation. The results of the tests in this zone suggest that wheat and barley were more or less equal for general feed purposes, providing of course, the latter was a smooth-awned variety if the straw is needed. Oats were decidedly lower in gross yield than wheat or barley. When grain without hulls is considered the results show that barley was 31.5% over oats and wheat excelled oats by 43%. The greater value of oat straw for cattle feeding would certainly not compensate for the kernel yield inferiority of the oat crop.

## VARIETAL PERFORMANCE

### GENERAL AVERAGE OF ALL TESTS

#### Varieties Listed in Alphabetical Order

#### Wheat

**APEX. Yield Grain Plus Straw in Pounds Per Acre.**—Apex ranked second to Thatcher but there was little difference between any of the varieties. **Yield Grain in Bushels Per Acre.**—Apex averaged 16.6 bushels per acre, .3 bushel lower than Regent and 2 bushels lower than Thatcher. In Zone 1B it outyielded Thatcher and in Zones 2C, 2D, 3C and 4A it exceeded Regent, but only in the case of Zone 2C, where it yielded significantly more than Apex, did it outyield either of the other varieties by a significant difference. **Yield Straw in Pounds Per Acre.**—There was little difference between any of the wheat varieties, Apex exceeding Regent by only 36 pounds and Thatcher by 66 pounds. **"Earliness."**—In Zones 2B and 4A Apex exceeded Thatcher by slight differences. Generally, however, Apex was .5 day later than Thatcher and 1 day later than Regent. **Height.**—In nearly all zones Apex excelled. In Zone 1B it was almost 2.5 inches taller than either of the other varieties and over the whole project it was nearly 1 inch taller than Thatcher or Regent. **Straw Strength.**—Generally Apex ranked second to Thatcher. The exceptions were in Zone 2D, where it tied with Thatcher and in Zone 1B where it was decidedly superior to the latter variety. As we have already mentioned, in the tests previously conducted by this organization, Apex has shown some inferiority in straw strength to Regent but in this test Apex was superior to Regent in ten out of the thirteen zones. In two out of the other three zones, Apex and Regent tied. Only in one zone was Regent superior to Apex in this characteristic. It might be again mentioned that in this test the new strain of Regent 975.6 was used. **Bushel Weight.**—Apex excelled in all zones and a general average over the whole project shows that it outweighed both Thatcher and Regent by a difference of approximately 1 pound. **Grades.**—Apex also excelled in all zones. Taking the test as a whole, 58.6% graded 1 Hard and 1 Nor. **Stem Rust.**—Light infection was reported only in the east and central parts of the province and Apex showed slightly less infection than Thatcher or Regent. **Leaf Rust.**—The percentage of infection reported was slightly more than in Regent but less than Thatcher. **Covered Smut.**—No infection was reported. **Loose Smut.**—Only a light infection was reported. The percentage of infected heads in the Apex variety was slightly more than in Regent and somewhat more than appeared in Thatcher. **Shattering.**—The loss to all wheat varieties was very slight. Apex sustained less loss than the others. **1941 Results and 1942 Recommendations.**—In this test, Apex appeared to most advantage in Zones 1B, 2B, 2C, 2D, 3C and 3D. It is officially recommended for use in all zones except 3A, 4A and 4B.

**REGENT. Yield Grain Plus Straw in Pounds Per Acre.**—Regent was low but a general average over the entire test showed that it was exceeded by Apex and Thatcher by only 11 pounds and 62 pounds respectively. **Yield Grain in Bushels Per Acre.**—Taking the project as a whole Regent ranked second to Thatcher. It exceeded Apex, however, by only .3 bushel but was outyielded by Thatcher by a difference of 1.7 bushels. It appeared to most advantage in grain yielding ability in Zones 1B and 4B but in none of the zones did Regent outyield either of the other varieties by significant differences. **Yield Straw in Pounds Per Acre.**—A general average over the entire tests shows that Regent was outyielded by Apex by a difference of 36 pounds but exceeded Thatcher by 30 pounds. **"Earliness."**—Regent exceeded the other varieties in nearly all zones. The exceptions were in Zone 1A, where it was slightly later than Thatcher and in Zone 3B where it equalled Thatcher in its maturity period. A general average over the whole test shows that Regent ripened .5 day earlier than Thatcher and 1 day earlier than Apex. **Height.**—In Zones 3C and 4B, Regent excelled. In Zones 1A, 1B, 2A and 3E, it was either equal to Thatcher or was slightly taller than the latter variety. In other zones, however, Regent was the

shortest variety. It was generally exceeded in height by Apex by marked differences but was only slightly shorter than Thatcher. A general comparison over the whole test shows that although Regent was exceeded by Apex by nearly 1 inch, Regent and Thatcher were almost equal. **Straw Strength.**—Regent was inferior to the other varieties in nearly all zones. The only exceptions were in Zone 1A, where it was slightly superior to Apex, in 1B where it showed slight superiority to Thatcher, and in Zones 3E and 4A where it tied with Apex. **Bushel Weight.**—Regent was outweighed by Apex in all zones and a general average over the entire project shows that the difference between these varieties was 1 pound. Some slight variations were shown in the different zones between Regent and Thatcher but taking the test as a whole these varieties were almost equal in bushel weight. **Grades.**—In the southern zones and in Zones 3D and 3E, Regent exceeded Thatcher but elsewhere it was low in commercial grades. Taking the project as a whole, the percentage of this variety grading 1 Hard and 1 Nor. was only 33.6%. **Stem Rust.**—Only a light infection was reported. Regent showed slightly more infected stems than Apex and somewhat less than Thatcher. **Leaf Rust.**—Regent showed slightly less infection than Apex and somewhat less than Thatcher. **Covered Smut.**—All wheat varieties were free. **Loose Smut.**—Only a light infection was reported. Regent showed a slightly less number of infected heads than Apex and slightly more than Thatcher. **Shattering.**—The light loss suffered by this variety was somewhat more than the loss sustained by Thatcher or Apex. **1941 Results and Official Recommendations for 1942.**—In this test, the performance of Regent was most outstanding in Zones 1B, 3A, 3E, and 4B. In the recommendations of the Saskatchewan Cereal Committee for 1942, Regent is not listed by zones but in its report the Committee states that the strain 975.1 and also 975.6 (which is used in this test) have appeared to be useful in Zones 3A, 3B and the eastern part of Zone 2A. In this regard the report continues that several strains are now under test which may prove to be much more satisfactory.

**THATCHER. Yield Grain Plus Straw in Pounds Per Acre.**—Thatcher excelled, but it outyielded Apex and Regent by differences of only 51 pounds and 62 pounds respectively. **Yield Grain in Bushels Per Acre.**—Thatcher also excelled in grain yield, exceeding both Apex and Regent in all but two zones. The exceptions were in Zone 1B, where it was the lowest yielding variety, and in Zone 4B where it was exceeded by Regent by a slight difference. In Zones 1A, 2B, 2D and 3C, Thatcher outyielded both Apex and Regent by significant differences. In Zone 3E, the difference between Thatcher and Regent was not significant but Thatcher significantly outyielded the Apex variety. A general comparison over the whole test shows that Thatcher, with an average yield of 18.6 bushels, outyielded Regent and Apex by differences of 1.7 bushels and 2 bushels respectively. **Yield Straw in Pounds Per Acre.**—In Zone 2B, Thatcher exceeded both Apex and Regent but, taking the test as a whole, Thatcher was low in straw yield. **"Earliness."**—In most zones Thatcher ranked second to Regent and a general average over the entire project shows that Thatcher was .5 day later than Regent and .5 day earlier than Apex. **Height.**—Thatcher ranked second to Apex. In seven out of the thirteen zones it exceeded Regent, but a general average over the whole test shows that it was only slightly taller than the latter variety. **Straw Strength.**—Thatcher showed superiority in nearly all zones. The only exceptions were in 1B where it was decidedly inferior to Apex and Regent, and in Zone 2D where it tied with Apex and was only slightly superior to Regent. **Bushel Weight.**—Thatcher was exceeded in bushel weight by Apex in all zones and over the whole test the average difference between these varieties was nearly 1 pound. Slight variations appeared between the weights of Thatcher and Regent in the different zones but taking the tests as a whole, these varieties were almost equal. **Grades.**—With the exception of the southern zones and in Zones 3D and 3E where it was low in grades, Thatcher ranked second to Apex and was superior to Regent. **Stem Rust.**—Although only lightly infected, Thatcher showed slightly more infection than Apex or Regent. **Leaf Rust.**—The percentage of infection was slightly more than in Apex or Regent. **Covered Smut.**

—No infection was reported. **Loose Smut.**—Only a small percentage of infected heads appeared in the wheat varieties. Thatcher was somewhat less infected than Apex or Regent. **Shattering.**—The very light loss sustained by Thatcher was slightly more than the loss suffered by Apex and slightly less than Regent. **1941 Results and 1942 Recommendations.**—The results of this test show that Thatcher made the best showing in Zones 1A, 2B, 2D and 3C. It is officially recommended for use in all zones in 1942.

## Oats

**VALOR. Yield Grain Plus Straw in Pounds Per Acre.**—Valor was exceeded by Vanguard and Victory by differences of 289 pounds and 409 pounds per acre respectively. **Yield Grain in Bushels Per Acre.**—Valor was also the lowest of the three oat varieties in grain yield, although the differences in grain yield were not as marked as in total yield. A general average of all tests showed that Valor was exceeded by Vanguard and Victory by 1.9 bushels and 3.2 bushels respectively. Valor showed to most advantage in Zones 1A, 2C, 2D and 3E. In Zone 1A it exceeded Victory by 1.5 bushels. In Zone 2C it again exceeded Victory, the difference between these varieties being .5 bushel. In Zone 2D it excelled in yielding ability, outyielding Victory by 3.3 bushels and Vanguard by 4 bushels. In Zone 3A it exceeded Vanguard by .8 bushel, and in Zone 3E it again outyielded Vanguard by 1 bushel. **Yield Straw in Pounds Per Acre.**—In Zones 2C, 2D and 4A, Valor ranked second, but in all other zones it was the lowest yielder. **"Earliness."**—The early maturing characteristic of Valor was shown in all zones. It ripened earlier than Vanguard, its nearest competitor, by differences ranging from 2.8 days in Zone 1B to 8.7 days in Zone 2A. A comparison with Victory shows that it was earlier than this variety by differences which ranged from 4.2 days in Zone 1B to 13 days in Zone 2C. Taking the project as a whole, Valor exceeded Vanguard and Victory in "earliness" by differences of 6.5 days and 9.7 days respectively. **Height.**—In most zones Valor was exceeded by the other oat varieties. It showed its best comparative height in Zone 2D (where it equalled Victory and exceeded Vanguard) and in 3E (where it exceeded Vanguard). It also exceeded Vanguard in Zone 3D, but the difference was only of a slight nature. **Straw Strength.**—Considerable variation occurred between the respective oat varieties in the different zones, but taking the test as a whole, the difference between varieties was very slight. Valor showed most superiority in Zones 2D and 3A where it excelled. Although in a number of zones it was inferior to Vanguard and Victory, the differences were not of a marked nature, and Valor appeared to be reasonably satisfactory in this characteristic. **Bushel Weight.**—In six zones Valor outweighed the other varieties. In the remaining seven zones it was exceeded in weight by Victory. Over the whole project Victory outweighed Valor by a difference of only .3 pound, but Valor exceeded Vanguard by a difference of 1.3 pounds. **Grades.**—Generally Valor graded well and taking the test as a whole it excelled the other varieties; nearly 67% of this variety being in the statutory grades 1 CW to 3 CW. **Stem Rust.**—Only a light infection was reported. The infection appearing on Valor and Victory was almost equal, but Valor showed a higher percentage of infected stems than Vanguard. **Crown Rust.**—While the infection was not heavy, Valor appeared to be somewhat more infected than Victory or Vanguard. **Smut.**—Valor showed about the same percentage of infection as Victory but showed decidedly less than Vanguard. **Shattering.**—Valor appeared to suffer somewhat more loss than the other varieties in a number of zones. It should be noted, however, that this may in part be due to the "earliness" of Valor and the fact that in some tests it was not harvested at the proper time. **1941 Results and 1942 Official Recommendations.**—In this test Valor made its best showing in Zones 1A, 2C, 2D, 3A and 3E. In the official recommendations Valor is not listed by zones but is shown as a new variety requiring further test.

**VANGUARD. Yield Grain Plus Straw in Pounds Per Acre.**—Vanguard was outyielded by Victory by 120 pounds, but it exceeded Valor by nearly 300 pounds. **Yield Grain in Bushels Per Acre.**—Vanguard ranked second to Victory in most zones. In Zones 1A, 2A and 2C, it outyielded both Victory and Valor but failed to do so by differences which were significant. In Zones 2B, 3C and 3D, however, Vanguard yielded significantly more than Valor. **Yield Straw in Pounds Per Acre.**—Vanguard ranked second to Victory in most zones, although in Zones 2C, 3B and 4B Vanguard excelled. Taking the project as a whole, Vanguard was exceeded by Victory by 66 pounds, but the former variety exceeded Valor by 231 pounds. **"Earliness."**—Vanguard ranked second to Valor in all zones. Taking the project as a whole, Vanguard ripened 3.2 days earlier than Victory, but was later than Valor by a difference of 6.5 days. **Height.**—In ten zones Vanguard was shorter than Victory and somewhat taller than Valor. In Zones 2D, 3D, and 3E, however, it was the shortest variety. Over the entire test Vanguard was exceeded by Victory by a difference of 2.6 inches, but exceeded the Valor variety by nearly 1 inch. **Straw Strength.**—Vanguard excelled in three zones and tied for first place in two others. Generally, although no great differences appeared between varieties, Vanguard was slightly superior to Victory and Valor, with the exception of Zone 2B where it tied with Valor. **Bushel Weight.**—Vanguard was outweighed by Valor and Victory in all zones. Over the whole test it was exceeded by these varieties by differences of 1.3 pounds and 1.6 pounds respectively. **Grades.**—Vanguard was somewhat inferior to Valor and Victory in nearly all zones. It showed its best comparative grades in Zones 4A and 4B where it equalled Victory and exceeded Valor. Generally, however, it was inferior to the other varieties. Over the whole project 57.5% of this variety was placed in the statutory grades 1 CW to 3 CW. **Stem Rust.**—Vanguard showed less infection than the other varieties. **Crown Rust.**—Vanguard was slightly less infected than Victory and showed somewhat less infection than Valor. **Smut.**—Vanguard showed decidedly more infection than either Valor or Victory, which were about equal. **Shattering.**—The loss to this variety was almost equal to Victory, but somewhat less than the loss sustained by Valor. **1941 Results and 1942 Official Recommendations.**—The results of this test indicate that Vanguard showed to most advantage in Zones 1A, 2A, and 2C. It is officially recommended in Zones 2A, 2B, 3A, 3B, 3C, 3D and 4A.

**VICTORY—Yield Grain Plus Straw in Pounds Per Acre.**—Victory excelled, outyielding Vanguard and Valor by differences of 120 pounds and 409 pounds respectively. **Yield Grain in Bushels Per Acre.**—Victory also excelled. Taking the project as a whole, it showed an average yield per acre of 32.2 bushels, exceeding Vanguard by 1.3 bushels and Valor by 3.2 bushels. In Zones 3B and 3C, Victory outyielded both Vanguard and Valor by differences which were significant. In Zones 2B, 3D and 4A, it failed to exceed Vanguard by differences which equalled the necessary difference for the zone, but yielded significantly higher than Valor. **Yield Straw in Pounds Per Acre.**—In most of the zones Victory excelled and in the other zones, with exception of Zone 2C where it was the lowest yielder, it ranked second to Vanguard. Over the whole project Victory exceeded Vanguard by 66 pounds and outyielded Valor by nearly 300 pounds. **"Earliness."**—Victory was the latest maturing oat variety in all zones. A general average over the whole test shows that it was exceeded by Vanguard and Valor by differences of 3.2 days and 9.7 days respectively. **Height.**—With the exception of one zone (Zone 2D where it tied with Valor) Victory excelled. In most zones it was decidedly taller than Vanguard or Valor and over the entire project it exceeded these varieties by differences of 2.6 inches and 3.5 inches respectively. **Straw Strength.**—In five zones Victory excelled and a general comparison shows that this variety was slightly inferior to Vanguard and slightly superior to Valor. In a few zones, however, (2D, 4A and 4B) Victory was distinctly inferior to the other varieties. **Bushel Weight.**—In seven zones Victory excelled. In the other six zones it was exceeded by Valor by small differences. It was decidedly superior to Vanguard in all zones. A general average, covering the whole project, showed that Victory outweighed Valor and Vanguard by differences of .3

pound and 1.6 pounds respectively. **Grades.**—Generally Victory ranked second to Valor and exceeded Vanguard. Taking the test as a whole, the percentage of this variety grading 1 CW to 3 CW was 62.1%. **Stem Rust.**—Victory and Valor were almost equal in the amount of infection reported, but Victory showed more infection than Vanguard. **Crown Rust.**—Victory showed slightly more infection than Vanguard and somewhat less than Valor. **Smut.**—Victory showed about the same percentage of infection as Valor and decidedly less than Vanguard. **Shattering.**—Victory was almost equal to Vanguard in the loss sustained but it showed a smaller loss than Valor. **1941 Results and 1942 Official Recommendations.**—In this test Victory appeared to make the best showing in Zones 1B, 2B, 3A, 3B, 3C, 3D, 3E, 4A and 4B. It is officially recommended for use in all zones.

## Barley

**NEWAL. Yield Grain Plus Straw in Pounds Per Acre.**—Newal excelled. Taking the project as a whole it exceeded Rex and O.A.C. 21 by differences of 416 pounds and 447 pounds respectively. **Yield Grain in Bushels Per Acre.**—Newal also excelled. With the exception of Zone 2C where it tied with Rex, it consistently outyielded the other varieties and in the following zones Newal exceeded both Rex and O.A.C. 21 by differences which were significant—2A, 2B, 3A, 3B, 3C, 3E and 4B. In Zones 1A, 1B, 2C, 2D, 3D and 4A, Newal failed to exceed Rex by differences which equalled the necessary differences for the zones, but yielded significantly more than O.A.C. 21. Taking the project as a whole, the average yield of the Newal variety was shown as 30.6 bushels, 3.6 bushels higher than Rex, and exceeding O.A.C. 21 by 6.4 bushels. **Yield Straw in Pounds Per Acre.**—Although it excelled in straw yield in a few zones, generally Newal ranked second to Rex. With the exception of Zones 2A and 4A where it was outyielded by O.A.C. 21 by slight differences, Newal consistently exceeded the O.A.C. 21 variety. Over the entire project, Newal was exceeded by Rex by 120 pounds, but outyielded O.A.C. 21 by 138 pounds. **"Earliness."**—In five zones Newal excelled, but in most tests it ranked second to O.A.C. 21 in its maturity period. Generally, however, the differences were not of a marked nature and taking the project as a whole, O.A.C. 21 ripened only .2 day earlier than Newal. Rex ripened earlier than Newal in three zones, but over the whole test Newal exceeded the Rex variety by 1 day. **Height.**—Much variation occurred between the comparative heights of the three varieties in the different zones. In nine zones, however, Newal equalled or exceeded the other varieties, and over the whole test it exceeded O.A.C. 21 and Rex by differences of .3 inch and .7 inch respectively. **Straw Strength.**—Newal showed most superiority in Zones 3A, 3B and 4B. In these zones it excelled. Generally, however, it ranked second to Rex. In most zones it was somewhat superior to O.A.C. 21, but the most outstanding difference was shown in Zone 3A where Newal was decidedly superior to the O.A.C. 21 variety. **Bushel Weight.**—In most zones Newal ranked second to Rex. The exceptions were in Zones 2A and 4A where it tied with O.A.C. 21, and in Zones 2D and 3B where it was outweighed by O.A.C. 21 by slight differences. A general average of all tests shows that Newal was outweighed by Rex by a difference of 3.7 pounds but exceeded O.A.C. 21 by .4 pound. **Grades.**—Newal, being a six-rowed, smooth-awned variety, could not be graded higher than 3 CW. An average over the whole test shows that 60.2% was placed in this grade. **Stem Rust.**—Newal tied with O.A.C. 21 in the percentage of infection recorded. It was slightly less infected than Rex. **Leaf Rust.**—Newal showed less infection than the other varieties. **Covered Smut.**—Although only slightly affected, Newal appeared to show more infection than the other varieties. **Loose Smut.**—Newal showed more infected heads than O.A.C. 21 or Rex. **Shattering.**—Newal was equal to Rex in the loss reported. It suffered decidedly less than O.A.C. 21. **1941 Results and 1942 Official Recommendations.**—In these tests, Newal appeared to be at its best in Zones 2A, 2B, 3A, 3B, 3C, 3E and 4B. It is officially recommended in Zones 2B, 2D, 3D, 3E, 4A, and 4B.

**O.A.C. 21. Yield Grain Plus Straw in Pounds Per Acre.**—O.A.C. 21 was lower than the other varieties in gross yield in all zones. A general average showed that the difference between O.A.C. 21 and Rex was only 31 pounds, but Newal exceeded O.A.C. 21 by an average of 447 pounds. **Yield Grain in Bushels Per Acre.**—O.A.C. 21 was also low. Only in one zone did it outyield either of the other varieties. This was in Zone 3B where it exceeded Rex by 5.3 bushels, a difference which was significant. A general average over the whole project showed that O.A.C. 21 yielded 24.2 bushels per acre, and was exceeded by Rex and Newal by differences of 2.8 bushels and 6.4 bushels respectively. **Yield Straw in Pounds Per Acre.**—In eleven out of the thirteen zones O.A.C. 21 was low. Its best comparative straw yields were shown in Zones 2A and 4B where it exceeded Newal by slight differences. A general average shows that O.A.C. 21 was outyielded by Newal and Rex by differences of 138 pounds and 258 pounds respectively. **"Earliness."**—In eight zones O.A.C. 21 excelled. In Zone 1B and 3C it was slightly later than Newal, but in Zones 2C, 2D and 4B it was 1.5 to 5 days later than the latter variety. A general average over the whole project showed that while O.A.C. 21 was the earliest variety, it exceeded Newal by only .2 day and Rex by 1.2 days. **Height.**—In Zones 2D, 3A, and 4B, O.A.C. 21 was distinctly taller than Rex and somewhat taller than Newal, but in a number of zones it was the shortest barley variety. Generally, however, the differences were not of a marked nature and an average of all tests showed that O.A.C. 21 exceeded Rex by a difference of .4 inch, while Newal exceeded O.A.C. 21 by .3 inch. **Straw Strength.**—In six zones O.A.C. 21 was inferior to the other varieties but with the exception of Zone 3A, where it was decidedly inferior, the differences were not outstanding. Taking the project as a whole, however, O.A.C. 21 showed the weakest straw. **Bushel Weight.**—O.A.C. 21 appeared to most advantage in Zones 2A and 4A where it tied with Newal, and in Zones 2D and 3B where it exceeded the Newal variety by slight differences. Taking the test as a whole, however, O.A.C. 21 was outweighed by Newal and Rex by differences of .4 pound and 4.1 pounds respectively. **Grades.**—O.A.C. 21 appeared to most advantage in Zone 4A. Over the whole project 57.4% of this variety was placed in the statutory grades 1 CW to 3 CW. **Stem Rust.**—The percentage of infection appearing on the stems of this variety was equal to Newal and was slightly less than the infection shown on Rex. **Leaf Rust.**—O.A.C. 21 appeared to show somewhat less infection than Rex, but was more heavily infected than Newal. **Covered Smut.**—O.A.C. 21 was slightly more infected than Rex, but showed less infection than Newal. **Loose Smut.**—This variety showed more infection than Rex, but decidedly less than Newal. **Shattering.**—O.A.C. 21 suffered nearly twice the loss reported to Newal or Rex. **1941 Results and 1942 Official Recommendations.**—From the results of this test, O.A.C. 21 made the best showing in Zones 3B, 3D and 4A. It is officially recommended in Zones 3B, 3C, 3D and 4A.

**REX. Yield Grain Plus Straw in Pounds Per Acre.**—In total yield grain plus straw Rex exceeded O.A.C. 21 by a difference of only 31 pounds, but it was outyielded by Newal by a difference of 416 pounds. **Yield Grain in Bushels Per Acre.**—With the exception of Zone 2C where it tied with Newal, and Zone 3B where it was outyielded by both Newal and O.A.C. 21, Rex was second in yielding ability in all zones and in Zones 1A, 1B, 2B, 2C, 3C, 3E and 4A, it outyielded the O.A.C. 21 variety by differences which were significant. An average of all tests in the project showed that Rex yielded 27 bushels per acre, exceeding O.A.C. 21 by 2.8 bushels, but being outyielded by Newal by a difference of 3.6 bushels. **Yield Straw in Pounds Per Acre.**—Rex excelled in ten zones and in the other three zones in ranked second to Newal. A general average covering the entire test showed that Rex exceeded Newal and O.A.C. 21 by 120 pounds and 258 pounds respectively. **"Earliness."**—In ten out of the thirteen zones Rex was later than either of the other barley varieties. The most outstanding difference appeared in Zone 4B where it was 4 days later than O.A.C. 21 and 7 days later than Newal. Taking the project as a whole, Rex required 84.8 days to reach maturity, being 1.2 days later than O.A.C. 21 and 1 day later than Newal. **Height.**—In Zone 4A, Rex was slightly more than 1 inch taller than the other

varieties. In some of the other zones it equalled or exceeded either O.A.C. 21 or Newal by slight differences, but a general average of all tests shows that Rex was .4 inch shorter than O.A.C. 21 and .7 inch shorter than Newal. **Straw Strength.**—In seven out of the thirteen zones Rex excelled, and in three zones it tied with one of the other varieties. Only in Zones 3A, 3B and 4B was it inferior to Newal and in these zones it showed better straw strength than O.A.C. 21. **Bushel Weight.**—Rex was decidedly higher in weight than the other varieties in all zones, and a general average over the entire project showed that it exceeded Newal and O.A.C. 21 by differences of 3.7 pounds and 4.1 pounds respectively. **Grades.**—Rex graded comparatively well in all zones and over the whole test nearly 73% of this variety was placed within the statutory grades 1 CW to 3 CW. **Stem Rust.**—Although only lightly infected, Rex showed slightly more infection than the other varieties. **Leaf Rust.**—The percentage of infection appearing in Rex was somewhat more than in O.A.C. 21 and decidedly more than the infection reported in Newal. **Covered Smut.**—Rex was somewhat less infected than the other barley varieties. **Loose Smut.**—Rex again showed the least percentage of infection. **Shattering.**—The loss suffered by Rex was approximately equal to the loss sustained by Newal and decidedly less than the loss to O.A.C. 21. **1941 Results and 1942 Official Recommendations.**—In the 1941 test Rex appeared to show to most advantage in Zones 1A, 1B, 2A, 2B, 2C, 2D, 3A and 3C. The 1942 recommendations list this variety as suitable for use in all zones with the exception of 3D, 4A and 4B.

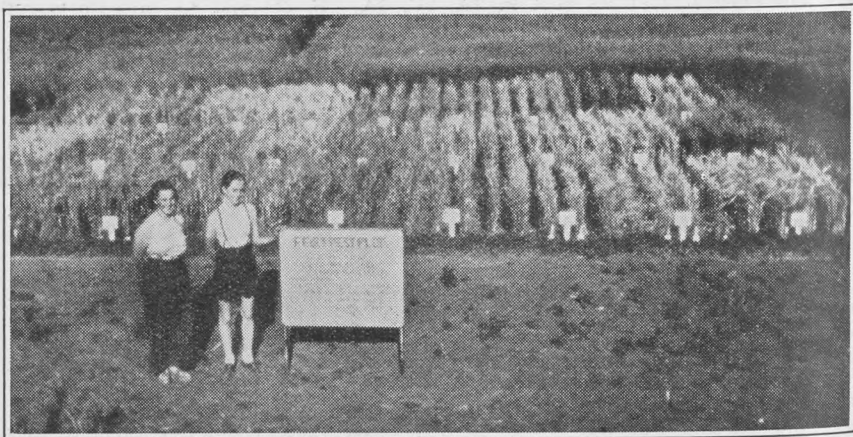
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Table No. 25 shows markings covering plumpness, color and general appearance of each variety of the three crops.

**WHEAT. Grain Plumpness.**—Apex consistently excelled Thatcher and Regent throughout all the zones. Thatcher averaged slightly above Regent. Apex made its best showing in Zones 2C, 3B, 3D and 4A and its poorest in 4B. Regent was good in 2C, 3B and 3D and was poor in 1A, 2D, 3E and 4B. Thatcher was at its best in 2A, 2C, 3A, 3B, 3D and 4A and its worst in 1A, 3E, and 4B. **Grain Color.**—Apex excelled in all zones excepting 2C and 3D where it was equalled by Thatcher and Regent. Thatcher averaged slightly below Regent consistently. Apex was especially good in 1B, 2C and 4A and did not go below 77 in any zone. Regent was very good in 2C and 3D and did not go below 75 in any zone. Thatcher was between 81 and 85 in 2C, 3D and 4A, but was below 76 in 1A, 2A, 2D, 3A and 3E. **General Appearance of the Grain.**—Apex was consistently the best in all zones. Regent excelled Thatcher in all zones excepting 3B, 3C, 3D and 4A. Apex made its best showing in 2C, 3D, and 4A. Regent was very good in 2C and 3D but poor in 1A, 2D, 3E and 4B. Thatcher did well in 3D but poorly in 1A, 1B, 2A, 2D, 3A, 3E and 4B.

**OATS. Grain Plumpness.**—Valor averaged the best with Victory coming a close second. Valor excelled in 1B, 2A, 2B, 2D, 3A, 3D and 3E and was excelled in 1A, 3B, 3C, 4A, and 4B. Victory excelled in 1A, 3B, 3C, 4A and 4B, but was poorest in 3A. Vanguard did not excel in any zone, but it was good in 2A, 2B, 3B, 3D, 3E and 4A. It was poor in 1B and 2C. **Grain Color.**—Valor and Vanguard tied for first place. Valor excelled in 2B, 2D, 3D, and 3E and was not lowest in any zone. Victory did not excel in any zone and was poorest in all zones excepting 2C, 2D and 3C. Vanguard excelled in 1A and 4B, was good also in 2C, 3D and 3E, and was not poor in any zone. **General Appearance of the Grain.**—Valor averaged highest with Victory taking second place. Valor excelled in 2B, 2D, 3A, 3D and 3E and was lowest in 3B and 3C. Victory excelled in 2C, 3B and 3C but was the lowest variety in 2B, 2D, and 3A. Vanguard was highest variety in 2A and lowest in 2D.

**BARLEY. Grain Plumpness.**—Rex, a two-rowed variety, excelled consistently throughout all zones. O.A.C. 21 and Newal, both six-rowed varieties, tied for second place. On the whole, plumpness was good throughout the tests excepting in Zone 4B. **Grain Color.**—O.A.C. 21 and Newal tied for first place. Rex kernels have a brownish hue which puts the variety definitely below the others for brightness of color. All three varieties were best in 2C and 3D and poorest in 2A, 3A and 3C. **General Appearance of the Grain.**—O.A.C. 21 slightly excelled the others and they tied for second place. The greatest spreads were in 3A where O.A.C. 21 was 3% ahead and in 3E where Rex was 5% below the others.



The Test of Doris Bullen, Frenchman Butte, just prior to harvest

TABLE No. 25.—PLUMPNESS, COLOUR AND GENERAL APPEARANCE OF EACH VARIETY OF WHEAT, OATS AND BARLEY.

Zone	WHEAT						OATS						BARLEY					
	Thatcher		Apex		Regent		Valor		Vanguard		Victory		O.A.C. 21		Newal		Rex	
	P.	C.	P.	C.	P.	C.	P.	C.	P.	C.	P.	C.	P.	C.	P.	C.	P.	C.
	A.	A.	A.	A.	A.	A.	A.	A.	A.	A.	A.	A.	A.	A.	A.	A.	A.	A.
1A.....	74	73	75	81	80	82	76	73	78	74	78	74	74	80	80	78	84	72
1B.....	78	77	75	85	84	83	76	68	63	78	68	67	73	83	82	81	86	71
2A.....	76	74	74	79	78	77	76	75	79	74	76	80	70	88	74	79	90	66
2B.....	79	77	77	81	81	80	77	81	83	80	78	78	78	85	83	81	87	68
2C.....	85	83	85	88	88	88	88	70	83	73	73	70	85	80	80	85	88	80
2D.....	75	73	73	79	80	78	74	79	83	82	73	80	75	80	84	79	83	73
3A.....	78	73	75	81	77	78	77	79	74	76	73	73	71	87	74	79	88	66
3B.....	87	79	81	89	83	83	80	81	75	73	83	75	76	87	75	79	89	71
3C.....	81	79	79	84	83	82	79	79	78	72	78	79	74	87	74	77	89	66
3D.....	90	92	90	88	92	92	87	92	88	90	88	80	87	87	92	88	87	85
3E.....	73	73	72	78	79	78	80	88	81	78	86	79	73	83	86	84	84	73
4A.....	87	85	85	90	87	88	83	83	85	80	83	83	82	85	82	83	88	73
4B.....	69	75	72	74	80	78	74	82	79	76	80	78	79	72	80	75	75	72

## Conclusions

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Climatic conditions which prevailed throughout Saskatchewan in 1941 were far from satisfactory, and insect pests caused considerable damage over a wide area. Nevertheless a surprisingly large number of the tests reached maturity and were harvested and the project as a whole amply justified the work expended on it.

The results covering the three wheat varieties supplied information supplementing that which had already been obtained during the two-year period, 1939-40. Including as it did the new variety, Valor, that part of the test covering oat varieties was of particular importance, giving valuable data in connection with the comparative yield and other characteristics of this variety when compared to the two widely used varieties, Vanguard and Victory. Unfortunately in a number of instances the early ripening characteristic of Valor was not fully realized and the plots were not harvested at the proper time. This resulted in such considerable losses by shattering and birds that many tests were discarded. In other cases, while every effort was made to adjust the yields on the basis of the estimated damage, it was apparent that, had harvesting operations been timely, the results would definitely be in favor of the Valor variety.

Despite this unfavorable feature the value of these testing projects is demonstrated in a number of ways. Each year new co-operators are shown how an **accurate** test of varieties should be made and this fact, together with the ability to make a close study of the behavior of the varieties during the growing season, is of considerable educational value. The co-operators are also able to appreciate at least part of the widespread activities of the Wheat Pool Organization in their efforts to assist the agricultural life of the country. The tests are also a valuable aid to farmers in planning their operations for the coming season as well as furnishing reliable information to our cerealists upon which they are able to base their recommendations. In this regard, it may be mentioned that the Saskatchewan Cereal Variety Committee use the results of these tests with those of the Experimental Stations to formulate recommendations for the different zones. This Committee recently drew up cereal variety recommendations for 1942. These recommendations are now available in published circular from the University of Saskatchewan, Extension Department or your nearest Experimental Station, or the Saskatchewan Department of Agriculture, or the Saskatchewan Wheat Pool, Regina.

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